GRAMMATICAL OUTLINE OF KRAHO (GE FAMILY)

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1. Phones and phonemes
2. Classification of bases and affixes
3. Morpheme sequences
4. Morpheme list
5. Morpheme classes: inventory
6. Text

1. For purposes of description, all orthographical variants are regarded as free variants. This would imply that the author heard them as recorded[1]. Whether or not this is true, 'free variant' remains a convenient catchword for the phonemicizing which follows.

1.1. We give our phonetic value, inferred from his notes, for consonant letters used by Mr. Quain:

[p] [t] [k] released fortis unaspirated voiceless stops

[P] [T] [K] unreleased lenis unaspirated voiceless stops[2]

[b] [d] [g] voiced stops

[D] equals voiced stop [d]

[ʔ] glottal stop

[c] and [ts] fricative and affricate

[m] [n] [ŋ] voiced nasal continuants

[m̩] [n̩] syllabic nasal continuants

[m̥] [n̥][3] nasals followed by shwa vowel

[w] labialized semi-consonant, as in English *weak*

[ɱ] labio-dental nasal

[r] labio-dental voiced fricative, with lip rounding

[l] [r] as above, with l-quality superimposed upon it

[j] semi-consonant, as in English *yes*

[dj] close contact fricative in the same position as [j]

[ɲ] and [j̃] palatal nasal continuant—[j̃] nasalized

[h] semi-consonant, as in English *hat*

We now give the evidence for phonemicizing allophones which appear to be free variants.

/p/: allophones are [p] [P] [b]. The two pairs of free variants are: [p] and [P], [p] and [b]. Thus, free variants [p] and [P] are shown in identical morphemes: [pa] [Pa] *our (dual)*, (pidje] [Pidje] *ground*, [peja] [Peja] *finished*, [püdwyryrɛ] [Pudwyryrɛ] *moon*, [prɔ] [Prɔ] *grab*. [p] and [b] are shown in: [pupun] [bupun] *see*.

[P] has been found word initial as shown above[4], and in one example word medial, where it is in morpheme initial after a prefix: [hɔPidje] *his land*.

/t/: allophones are [t] [T] [d] [D]. Examples for free variants show the following pairs: [t] and [T], [t] and [d], [T] and [d], [D] and [id]. Thus, [t] and [T]: [tɔ] [Tɔ] *eye*, [itɛ] [iTɛ] *past*, [ita] [iTa] object pro-

* The extensive manuscript—by the late Buell Quain—on which Olive Shell based her work while a graduate student at Indiana University, has now become a part of the Franz Boas Collection of American Indian Languages in the American Philosophical Society Library at Philadelphia, where it may be consulted. C. F. V.

[1] The alternative is to consider the different ways of writing the same morpheme as phonemic differences. If this alternative were followed, it would shift the problem to morphophonemics.

[2] Quain calls some stops written in capitals unexploded, those in lower case exploded. We assume that he means unreleased and lenis for 'unexploded', and released and fortis for 'exploded'. He actually cites [T] versus [t], [K] versus [k]; by analogy, then, we ascribe the same difference to his [P] versus [p].

[3] In Quain's terminology these are 'nasal explosions'.

[4] It is possible that irrelevant factors may have influenced the difference between [P] and [p]; for example, a typist may have written capital [P] in sentence initial.

noun *it*, [itadje] [iTadje] *their*, [Ka?ty] [Ka?Ty] *sleeping mat*, [harte] [harTe] *his feast*, [krat] [KraT] *gourd*, [Kʰʷot] [KʰʷoT] *rest*. Examples of [t] and [d]: [itadje] [idadje] *their*, [Pytwryre] [Pydwryre] *proper name*, and of [T] and [d]: [iTadje] [idadje] *their*, [pa həəm chə Tɛ Tɛ Tɛt] [pa həm cʰɔ dɛ ?Tɛ Tɛt] *tremble because of shame*. An unclear contrast is [d] after vowel versus word initial [D] in what are evidently the same morpheme, because the forms in question are otherwise identical and they have the same meaning: [idadje] [Dadje] *their*. It follows, of course, from the examples above that [D] is also in free variation with [t] after vowel and with [T] after vowel: [itadje], [iTadje] and [Dadje] *their*.

[d] is occasionally found with [t] or [T] in the same morphemes: [Wa ipjɛn̪apupǫndoma mǫ] *I come to see you*, [Kikdot] *monkey*.

/k/: allophones are [k] [K] [g]. The pairs of free variants are: [k] and [K], [k] and [g], and [K] and [g]. Thus, [k] and [K]: [kra] [Kra] *son*, [kari] [Kari] *chicken*; [k] and [g]: [kari] [gari] *chicken*; and [K] and [g]: [Kari] [gari] *chicken*, [Ka] [ga] *you*, (Ko] [go] *water*, [Krat] [grat] *gourd*, [PryKany] [Prygany] *paths to center of village*.

[K] has been found word initial and medial, and in one occurrence word final. [g] is rare, but is further found in: [hɛpɛgri] *do you have this*, and in a form cited without translation [Pigahok].

/?/: [?] and [p] appear as free variants in one paradigm: [ijɔ?Tɔ] [ijɔpTɔ] *my tongue*, [ajɔ?Tɔ] [ajɔpTɔ] *your tongue*, and so on. [?] may be omitted in identical morphemes: [Ka?ty] [Katy] *sleeping mat*, [Ku?Kʰon] [KuKʰon] *gourd for carrying water*, [Ko?pip] [Kopip] *fan*.

[?] is seen in phonemic contrast with absence of glottal stop: [iKra] *my child* [i?Kra] *his child*; [Ka iKuKʰi] *you ask me*, [Wa i?KuKʰi] *I ask him* (Ka *you*, Wa *I*).

/c/: alternant writing in data: [ts] or [Ts].

/c/ occurs word initial and medial, as in the following: [ca] *stand*, [cəm̪] *but*, [ijɔ cwyr] *I shot*, [Wa cwa] *I bathe*, [ijɔ cwaTi] *I am sleepy*, [ajɔ?TʷwaTi] *you are sleepy*, [hici] *his wife*, [icüti] *I have pain*, [Ra ite ɯncor] *I have hung it up*, [icər· *I entered*, [hacü] *get water*, [pytsit] *one*.

/m/: allophones are [m] [m̥] [m̪]. Allophones [m̥] and [m̪], [m] and [m̥] are shown as pairs of free variants. Thus, [Wa pairəm ɲy] [Wapa irəm̥ ɲy] *I (on my part) sit (stay here)*. Examples of [m] and [m̪]: [hi Tɛ Kupan̪ mə pəm] [hi Tɛ Kupan̪ mɛ pym̪] *it fell like paper from the table*, [pa həm cʰɔ dɛ ?Tɛ Tɛt] [pa həəm̪ chə Tɛ Tɛ Tɛt] *tremble with shame*.

Allophone [m̥], exceedingly rare, has been found word final, and in one instance, word medial: [jaremǫ] *pull up*, [cüm̥], [pym̥], [ahemǫpej] *meanings unknown*. Allophone [m̪] is also rare. It resembles [m̥] in distribution in the word. Further examples are: [Twym̪] *fat* [cəm̪] *but*, [i?pa həm̪ nǫ] *to commit adultery*, [Wa homca] *I eat it*.

/n/: allophones are [n] [n̥] [n̪]. Examples for free variants show: [n] and [n̥], [n̥] and [n̪], [n] and [n̪]. Thus, [n] and [n̥]: [japyn] [japyn̥] *picked up*, [pupun] [pupun̥] *saw*, [jarɛn] [jarɛn̥] *pull up*, [Kdje-Kdjen] [Kdje Kdjen̥] *to get wood in a basket*. Examples of [n̥] and [n̪]: [ɯpyn̥] [ɯpyn̪] *grabbed*, [Kuhon̥] [Kuhon̪] *made fire*; and [n] versus [n̪]: [apən] [apyn̪] *piranha*.

Allophones [n̥] and [n̪] are rare. Additional examples of [n̥] are: [hapyn̥] *took up many*, and [kʰənpe], [Kon̥Tɔ], [pən̥pɯn], [ɯmpjɛn̥Tɛ] meanings not given. Examples of [n̪]: [Wa ipɛn̪ Kra mą mǫ] *I come*, [KamTwa n̪Tɛ] meaning not given.

/ŋ/: occurrence infrequent; allophones are [ŋ] [y]. These occur as free variants in: [Kaŋǫ] [Kayǫ] *snake*. [ŋ] occurs as a free variant with [ąj] as follows: [ąjənTɔT] [ŋ̈nTɔT] *your navel*.

[ŋ] occurs word initial and medial; most frequently, but not exclusively, it precedes nasalized vowels. Examples are: [Mɛ ŋ̈ Kata atak] *you were wounded*, [ŋ̈ jarɛn] *you told*, [ŋ̈ici] *your wife*, [Kaŋą] and [Kaŋa] *snake*, [ŋapar] *your nephew*.

/w/: allophones are [w] [r] [l] [ɱ]. Ex-

amples for free variants show such pairs as [w] and [r], [r] and [l], [r] and [rl], [tr] and [dl], [w] and [ɱ]. Thus, [w] and [r]: [wa] [ra] *I*, [Kʰjuwi̯] [Kʰjuri̯] *strike*, [dwajKʰuKra] [drajKʰuKra] *put on body*, [Kwom] [Krom] *(to) the water*, [Kwute Kwat] [Krute Krat] *four*, [PyKwo] [PyKro] *urucum*, [ijurKwa] [ijurKra] *my house*, [KʰoiKʰwa] [KʰoiKʰra] *sky*. Examples of [r] and [l]: [pǫ ri̯ mǫ nǫ] [pǫ li̯ mǫ nǫ] *where is it*, [pɔd re] [pɔd lɛ] *small ant-eater*, [irɔm̥] [ilɔm̥] *bush*, [harte] [halte] *his feast*, [pərco] [pəlco] *kind of fruit*, [Katɔr] [Katɔl] meaning obscure, [Kaper ho] [Kapel ho] *feather palm leaf*. Example of [r] and [rl]: [ɲũrKwa] [ɲũrlKwa] *his house*, and of [tr] and [dl]: [amaha Kre Kjatre] [amaha Kre Kjadle] *I don't know*. Example of [w] and [ɱ] is: [wa] may be replaced by [ɱa] in the utterance [iTa pɪn wa Ka Ko hapɔ] meaning not given.

[w] occurs only word initial and medial; all word final /w/'s are [r] or, in a few instances, [l]; /w/'s preceding stops or nasals appear to be always [r] or, infrequently, [l]. [r] is more frequent in the data than [w]. [l] though rare, occurs in addition to the examples above as follows: [Kultɔ], [Kʰul pyrɛn̨] meanings not given, [jaKʰol] *smoked*, [haKʰolTɔ] *smoking*, [jaKʰolnare] *not smoking*, [Mudli?Tɔr] meaning not given. [ɱ] has been found in only four expressions, always in [ɱa] combination. A further example is: [a?Tɛ ɱa Tɔn] *who made it*.

/j/: allophones are [j] [dj] [ɲ] (alternant writing of ɲ = i̯). Allophones [j] and [dj] are free variants: [pijɛ] [pidjɛ] *ground*. [ijɻTɔT] [idjɻTǫT] *I remain*.

Other occurrences of [dj] are: [Kdje-Kdjen] *to get wood in a basket*, [Ketdje] *maternal relative*, [djɻKucü], [djudja], [Kjɛ-dje], [Kʰjedje], [Kʰdjedi̯e] meanings unknown. Allophone [ɲ] (or i̯) occurs with few exceptions before nasalized vowels, or following [m], as in the following: [ɲų] *he was sitting*, [iɲɪci] *my wife*, [iɲų jaren] *I told*, [amɲi], [amɻa], and [ɲüm] meanings not given.

/h/: occurs word initial, medial, and uncommonly, word final: [Wa hompu] *I see him, it*, [Wa hapy] *I take many*, [Ra hǫt] *he is already sleeping, he slept*, [hacü] *get water*, [hɔ?To] *his tongue*, [Wa hama mǫ] *I go far off*, [Kuhon] *fire*, [jahɛ] *go hunting*, [Kuhɻ] *arrow*, [Kujahɛk] *sent*, [Wa Kra ga?hyʰ] *I shall hit you*.

In summary, the consonant phonemes are p, t, c, k, ?, m, n, ŋ, w, j, h.

Phonemic clusters with [h] as the second member and [p], [t], [k] or [c] as the prior member are set up on the following evidence:

The assumption is made that some morphemes with phonemic cluster stop plus [h] were originally heard as stop without [h]. Examples for free variants show [p] and [ph], [t] and [th], [k] and [kh]. Thus, [p] and [ph]: [Rupkʰu] [Rupʰku] *name of native*. Examples of [t], [T] and [Tʰ]: [itɛ] [iTɛ] [iTʰɛ] *past*. Examples of [K] and [Kʰ]: [Ke] [Kʰe] *he*, [Kra] [Khra] *future*, [iKrɛ] [iKʰre] *house (isolated)*; so also [k] and Kh]: [kra] [Khra] *hand*; [K] and [kh]: [Kra] [kʰra] *future*. Examples of [c] and [ch]: [Kacər] [Kacʰər] *withdraw*.

The stops in cluster with [h] appear in the following words for which variant forms with unaspirated stops have not been found: [huphi] *wild, brave*, [Ku KriThoprɔ] meaning not given, [Kʰni] *village*, [Kʰrɛ] *eat*, [KuKʰi] *ask*, [?Kʰuot] *for it*, [pɛŋ Tshe] *task* [icʰwa] *my teeth*. Cluster of [?] with [h] also occurs: [auKe ?ti ?hɔKjet] *many days*.

To set up stop plus [h] combinations as phonemic clusters is in accord with the structure or canonical forms of words, as the following paragraphs exemplify.

Clusters composed of stops as the prior member and /j/ as the second member are found in: [impjen] meaning not given, [Ketdje] *maternal relative*, [auKa ?Ti ?hɔKjet] *many days*, [cjə] *hole*, [ipɛi Ti ?Tɛ ?ɲyr] *I am very happy*. Clusters of stops plus /w/ occur in the following words: [prɔ] *grab*, [Twyɱ] *fat*, [me Kra Kuna] *all my songs*, [cwy] *throw, shoot*. Many clusters of stop plus stop are found: [huKɔppę] *her*

claws, [rɔpti] meaning not given, [papKo] *small basket of burity*, [hǫTpe] *always*, [TepK^{h}ryTTi] meaning not given, [ʔhaKpyne] (*he*) *returned*, [naniKTi] *type of banana*, [iʔpoKca] *light*, [iʔTe] *leg*, [WaiʔKuK^{h}i] *I ask him*. Clusters of stop plus nasal are rare: [KoTma] meaning not given, [nɛKmɛKmɛ meaning not given. [i̧ʔmą Krat Kre] *I have three gourds*.

Clusters may also contain semi-consonants as the prior member. The following such clusters contain stops as the second member: [ŋǫjpok] *carve*, [Kwyrpe] meaning not given, [nɔ arTɔ nǫ] *lie in shame*, [MerKa] meaning not given, [pɔrco] *kind of fruit*. Clusters of semi-consonants plus semi-consonants are rare: [Kuhja ᵢja ʔTɔ pɔ Kuraŋ] *I kill an antelope with my bow*, [rɔrho Tɛ Kaipɔ] *small box with cover*, [PeanTua rerja] *when it first happened*. Clusters of semi-consonants plus nasal are also rare: [wa hma pau jahɛ] *I go hunting*, [Kac^{h}ɔlnare] meaning not given.

Nasals compose the prior member in clusters with stops: [hompu] *see it*, [humTi] meaning not given, [amcu] *deny*, [ntɔ] *part of the body*, [rance] *cotton belt*. Clusters of nasal plus semi-consonant are found: [nɛmha Ka mɔ K^{h}ao] *it is not empty*, [amɲi] meaning not given, [nɔmri] *there is distance*, [ranrɛ] *it is finished*. Nasal plus nasal cluster occurs: [mnǫ Kwipu] *manioc cake*.

Clusters of three consonants occur; they are less frequent than two-vowel clusters. The most common types are found in the following: [K^{h}wį] *to break*, [K^{h}ni] *village*, [jaK^{h}jɛp] meaning not given, [ą̇jɔʔT^{s}waTi] *you are sleepy*, [impjɛn̨], [ᵢmprar], [inKrɛr], [runc^{h}ü] meanings not given, [nark^{h}ua] *a part of the body*, [ŋuṛKwa] *his house*.

Clusters of four consonants are found rarely: [ʔK^{h}rɔm] *lie*, [harK^{h}ra] meaning not given, [nK^{h}rɛr] *chants, those who sing*.

1.2. The letters used for vowels in the data are most easily presented in chart form. All but [ü] have nasalized counterparts.

i	y	u
ɪ		ü
e	ə	o
ɛ		ɔ
ä	a	

Again, we phonemicize on the basis of free variants.

/i/: allophones are [i] and [ɪ]. Examples for [i] and [ɪ] as free variants: [inKre] [ɪnKre] *three*, [piti] [pɪti] *all (gourds)*, [pa iKhem pa] [pa ɪKhem pa] *to be sad*. [Pulpin wa mǫ] [Pulpɪn wa mǫ] *I came from the garden*. The nasalized forms contrast as free variants also: i̧ci ɪ̧ci *wife*.

/e/: allophones are [ɛ] and [e]. Examples for free variants show [e] and [ɛ] in contrast: [Te] [Tɛ] *leg*, [c^{h}ek] [cɛk] *shoot and pierce*, [nare] [narɛ] *negative*. Nasalized forms [ę] and [ɛ̨] contrast as free variants: [harę] [harɛ̨] *tell*.

/a/: allophones are [a] and [ä]. These appear as free variants in the same morpheme: [pjaKre] [pjäKre] *to be weak*.

/o/: allophones are [ɔ] and [o]. They occur as free variants in the same morpheme: [ʔTɔ] [ʔTo] *tongue*.

By the above process, then, we have eliminated, for phonemic writing, symbols [ɪ], [ɛ], [ä], and [ɔ], leaving:

i	y	u
		ü
	ə	
e		o
	a	

Examples for free variation continue between these remaining vowels, but with so much intersection that it is impossible to combine any two as allophones of a single phoneme. To illustrate, the following pairs of free variants occur: [y] and [a], [y] and [u], [y] and [ɔ], [y̨] and [ə], [ə] and [ɔ], [ə̨] and [a], [ə̨] and [ą], [ə] and [ü], [ü] and [u], [ų̈] and [u̧], [ü] and [ɔ], [ų̈] and [ə̨], [ɛ] and [a], [ɛ̨] and [ą], [ɛ] and [ɔ], [a] and [ɔ]. Examples for these pairs follow. For [y] and [a]: [ɔmpɔ myiTa] [ɔmpɔ maiTa] *what is this*; for [y] and [u]: [ŋyhyr] [ŋuhyr] *he who was sitting*; for [y] and [ə]: [hiTɛ

Kupaŋ mɛ pyɱ] [hi Tɛ Kupaŋ mɔ pɔm] *it fell like paper from the table*; for [y] and [ə]: [Waɲy] [Waɲə] *I sit*; for [ə] and [ɔ]: [Kaprən pə] [Kaprɔn pɔ] *water turtle*, [Pį ʔnəm py] [Pį ʔnɔm py] *get firewood*, [həKme Kumɛ ʔKuKʰi] [hɔkmɛ Ku mɛ KuKʰi] *let's ask them*; for [ə] and [a]: [Kanə] [Kana] *snake*; for [ə] and [ą]: [iʔkrə] [iʔkrą] *his head*; for [ə] and [ü]: [Kacər] [Kacür] *withdraw*, [Khəi] [Khüi] *axe*; for [ü] and [u]: [püdwyryrɛ] [pudwyryrɛ] *moon*, [Wa itɛ hᵘompün] [Wa itɛ hompuŋ] *I saw it*; for [ų̈] and [ų]: [hų̈rlKwa] [hųrKwa] *his home*; for [ü] and [ɔ]: [Rüphkü] [Rɔphkɔ] *native's name*, [Khüi] [Khɔi] *axe*; for [ų̈] and [ų]: [hų̈nTɔt] [HɔnTɔt] *his navel*; for [ɛ] and [a]: [Kɛmɛ] [Kamə] *not empty*; for [ę] and [ą]: [Kʰnęrɛ] [Kʰnąrɛ] *small chattering parrot*; for [ɛ] and [ɔ]: [hi Tɛ Kupaŋ mɛ pyɱ] [hi Tɛ Kupaŋ mɔ pɔm] *it fell like paper from the table*, [hɛm hanɔ] [hɔm hanɔ] *I have found it*, [Kɛmɛ] Kamɔ] *not empty*, [imɛ Ka cwa Kwy] [imɔ Ka cwa Kwy] *I have no salt*, [PyKwe dwajKʰuKra] [PyKwɔ dwajKʰuKra] *put urucum on body*, [a] and [ɔ]: [ima Kuhihǫ] [imɔ Kuhihǫ] *give me your bow*.

Clusters of two vowels occur in various combinations. Common clusters appear in the following: [Krua] *bow*, [Khui] *ear plug*, [apaipü] *crazy*, [Kʰoi Kʰwa] *sky*, [iTyiTi] *I am strong*, [ceucedrɛ] *sting-rays*, [aiTea] *separate*, [auka?ti] meaning not given.

Nasalized vowels are infrequently found in clusters. Examples are: [hą ü ɲ ų̈ r] and [Kahąi] meanings not given.

A few three-vowel clusters occur in the data. Examples are: [Kacʰuao wa Kʰrat] *I begin to work*, [heai] *this person*. In such examples [u] and [i] may conveniently become /w/ and /j/, the remaining vowels then conforming to the two-vowel cluster pattern. Thus, /kachwao wa khrat/ *I begin to work*, /heaj/ *this person*.

2. Kraho stems or bases fall into three major morpheme classes—verbs, nouns, and particles. The classes are distinguished by affixation, or lack of it. Verb and noun bases may be preceded by the same sets of person marker prefixes, marking actor and goal in verbs, and possessive in nouns. Only verb bases, however, may be followed by past tense and augmentative suffixes. Particles, with the exception of a specific group termed 'relational', do not carry person marker affixes. The relational group may be prefixed by a certain set of person marker morphemes; they also occur in sequence after nouns. Symbols V, N, and P are used in the following description to denote any verb, noun, and particle bases respectively.

2.1. Verb bases may be conveniently divided into three groups, Va, Vb, and Vc. Each group may be subdivided (Vaa, Vab, etc.) according to suffixation (affix 41: -w ~ -n ~ -k ~ -m ~ zero) for past tense, and negative in all tenses.

Va bases are associated with particle -te (Pc) in past tense person actor sequence.

Vaa bases occur with zero suffix. cet *roast*, kukhi *ask*; ite ita cet *I roasted it*, wa kute ?kukhi *already he asked*.

Vab bases occur with -w suffix. co *hang*, khwę *eat*; wa ite kehe cow *already I have hung up the basket*, wa ite khwęw *already I have eaten*, wa khwęwnawe *I do not eat*.

Vac bases occur with -n suffix. me *throw away*, to *do*; wa ite itamen *I already threw it away*, wa ite itaton *I have already done it*.

Vad bases occur with -m suffix. ca *stand*; wa icamnawe *I do not stand*, wa ite acam *already I put you on your feet*.

Vb bases are combined with affixes of decade 20 in past tense person actor sequence.

Vba bases occur with zero suffix. Affixes of decade 20 occur also in present and future tenses in unique or reiterated person actor sequences with these bases. Vba bases isolated from person prefixes have not been found in the data. *ǫw ~ *ǫt *sleep*, *tǫt *remain (refusing to go)*; wa hǫt *he is already sleeping, he slept*, ŋitǫt *you remain*, kakhwa

nitǫt *you shall remain*, wa ŋitǫt *already you remained*.

Vbb bases occur with -w suffix. cwy *shoot*, pi ∼ api *climb*; ijocwyw *I shot*, me?khuot ijopiw *we climbed for it*.

Vc bases occur in the past tense in sequence with person morphemes 11, 12, and 13.1, which then mark person actor.

Vca bases occur with zero suffix. jet *hang*, tow *fly*; wa ijet *I already hung*, i?tow *he flew*.

Vcb bases occur with -w suffix. cwa ∼ cwy *bathe*, kato *turn, arrive, find*; wa icwyw *I already bathed*, wakhwa ikatownawe *I shall not arrive*, wa ikatow *I already arrived*.

Vcc bases occur with -m suffix, khǫ *drink*, tę *go, come*; i?khom *he drank*, wa ?tęm *he already went*, wa itemnawę *I do not go*.

Vcd bases occur with -k suffix. ty *die*, wy *descend*; ityk *I died*, wakhwa ityknawe *I shall not die*, wa iwyk *I descended*.

Vd bases are associated with particle -pi (Pc) in past tense person actor sequence.

Vda bases occur with -w suffix. mcu *deny*; wa ipimcuw *I denied*.

Vdb bases occur with -n suffix. kamę *play*, khję *play*; api kamęn *you played*, wa ipi khjęn *already I played*.

2.2. Noun bases fall into two-major groups. Noun bases of group one (Na) may be preceded by person morphemes of decades 10 and 20, which then mark possessive. Noun bases of group two (Nb) are themselves person markers, denoting person actor in present and future tenses.

Na bases may be subdivided according to possessive person markers.

Naa bases may be preceded by person morphemes 11, 12, and 13.1 for possessive. chwa *teeth*, kwa *child*, kwą ∼ kwę *head*: ichwa *my teeth*; akwa *your child*; i?kwą *his head*.

Nab bases are combined with affixes of decade 20 for person possessive sequence. * ɟci *wife* [this base has been found in the data only in sequence with decade 20], pak *ear*, to ∼ ?to *tongue*: ŋɟci *your wife*; hapak *his ear*; ijo?to *my tongue*.

Nb bases are four in number—wa *first person*, ka *second person*, ke *third person*, ku *first person dual, inclusive* [ku has been found as actor only in the present tense]: wa apu icy *I do my dance*, ka apu acy *you do your dance*, ke apu ncy *he does his dance*, ku apu pancy *we (dual, incl.) do our dance*.

2.3. Particle bases may be conveniently divided into three groups, Pa, Pb, and Pc.

Pa are adjectival, occurring only adjacent to preceding nouns Na or following copula (?) mą ∼ mə hiwe *thin*, khwawe *little*, twym *fat*; kumtüm hiwe *thin cappybara*, ywop khwawe *little dog*, kwoti twym *fat pig*.

Pb comprise connectives, occurring in 'clause' initial or between co-ordinates; interjections, which may be independent utterances; aspectives: kot *lest, because*, ne ∼ me *and*, nəmha *no*, nüwha *perhaps*, wa *already*, hama in affirmative statements of tę ∼ mǫ *go, come*.

Pc bases are relational, occurring with person prefixes 11, 12, and 13.2, and also following nouns Na; Pc bases may be followed by suffix 2, as pluralizer of the Pc person prefix: te subjectivizing [with Va]; pi subjectivizing [with Vd]; pe genitivizing, also *from*; ?nę ∼ nę accusativizing; khəm *to, in, from*; khen *in*; khən instrumental or agentive, *by*; ma ∼ mą ∼ ?mą ∼ mo ownership, motion towards; mə ∼ mǫ ∼ mo ∼ ma ∼ mǔ locative, indirect object; to ∼ ?to *for, by means of*.

2.4. Kraho affixes may be conveniently arranged into four decades according to overriding meaning or distribution.

Decade zero comprises two morphemes.

1. -kwha future [following Nb]: wakhwa ita pupu *I shall see it*.

2. me- ∼ -me pluralizer [as Nb and Pc suffix, and as prefix of Na, Pc, and V when associated with decade 10 and 20 morphemes]: wame ita pupu *we see it*.

Decade 10 comprises person markers [occurring as prefixes of nouns, verbs, and particles.]

11. i- *first person* possessive [with Na]; actor [in past tense with V]; goal [with certain V bases]; relative [with Pc]: ikwa *my child*, ityk *I died*, ka ipupu *you see me*, ipe *mine*.

12. a- ~ ŋo- ~ ŋi- ~ ŋu- ~ ŋa- *second person* possessive [with Na]; actor [in past tense with V]; goal [with certain V bases]; relative [with Pc]; apa *your arm*, wa awyk *already you descended*, wa apy *I get you*, ape *yours*.

13. *third person* morpheme submembers are grouped according to distribution.

13.1. i?- ~ i- ~ ?- ~ zero ~ change of phoneme (c > h, cw > w) possessive [with Na]; actor [in past tense with Vc, d]; goal [with certain V bases]: i?kwa *his child*, i?tor, *he flew*, wa ?cet *I roast him*.

13.2. ku- ~ k- actor [in past tense with Va]; goal [with certain V bases]; relative [with Pc]: wa kute apęw *he lifted you*, wa kupy *I get him*, kupe *his*.

13.3. au- ~ aų- ~ aųn- goal [with certain Vb bases]: wa amą aųnjawę *I tell you*.

13.4. ita- possessive [in singular with Na chwa *teeth*, in plural with Na, b]; goal [with V]: wa itapywnawe *I do not get it*.

14. pa- ~ pą- ~ pan- ~ pa?- ~ kupa- *first person dual inclusive* possessive [with Na]; actor [in past tense with Va, b, c]; goal [with certain V bases]: pąjuwkwa *our house*, pa?te pajawko men *we spit* (*throw our saliva*), ke pakukhi *he asks us*.

15. itaje- *third person plural*: wa itaje?-khen?khennawe *I do not break them*.

Decade 20 comprises possessive markers [with Nab], actor markers [in past tense with Vb], and goal markers [with certain verbs in which goals appear to be obligatory.]

21. jo- ~ ji- ~ ju- ~ ja- ~ jom- ~ jü- indicative of expressed referent—as possessive [with affixes 11, 12, 14, and Nab]; as actor [with affixes 11, 12, 14]; as goal [with affixes 11, 13.3, and Na]: ijapak *my ear*, wopkho jįci *Wopkho's wife*, i?khuot ijopir *I climbed for it*, wakhwa ko jacü *I shall get water*.

22. ŋo- ~ ŋi- ~ ŋu- ~ ŋa- ~ ŋų- *second person* possessive [with Nab]; actor [with Vb]; goal [with certain V bases]: meŋapak *your* (*pl.*) *ears*, wa ŋọt *you are already sleeping, you slept*, wa ŋamą *I watch you*.

23. ho- ~ họ- ~ hi- ~ hu- ~ ha- ~ h- ~ hų- *third person* possessive [with Nab]; actor [with Vb]; goal, when no referent is expressed with certain V bases: hįci *his wife*, wa họt *he is already sleeping, he slept*, wakhwa hocwy *I will shoot him*.

24. n- ~ in- singular goal when referent is or is not expressed [with verbs co and cek only, and with certain expressed nouns only]: wakhwa incek *I shall shoot with an arrow*, wa ite incow *I have hung it up*, wa ite wapo ncow *I have hung up the knife*.

Decade 30 [following Na and Pa bases]

31. -we diminutive: kawįwe *chicken*, kehewe *small basket*.

32. -ti augmentative: kawįti *big chicken*, khopti *big tree*.

Decade 40 [following verb bases; the distribution is indicated in the classifications of verb bases.]

41. -w ~ -n ~ -k ~ -m ~ zero past tense affirmative, and negative stem formative [in all tenses.]

42. -nawe negative [in all tenses.]

3. The utterances listed below constitute only simple sentence types. They are presented in three groups of actor-verb sequences which are stated in terms of actor, goal, and verb. Between initial actor and final verb there may be (1) nothing; (2) a goal which may be pleonastically marked; (3) a pleonastically marked actor which may be preceded or followed by a goal. The three groups are symbolized by these formulas, in which A signifies actor, G goal, and V verb: group (1) A V; group (2) A G ±G V; group (3) A ±G A ±G V. Actors and goals are expressed by person marker prefixes or by nouns.

Occurring simultaneously with the actor, goal, and verb morphemes of these groups are two types of particle constructions which

do not express actor or goal. They are the simple particle Pb and indirect object composed of particle Pc preceded by noun Na or person prefix of decade 10. The latter constructions are symbolized by ... Pc. The indirect object is inserted immediately before the verb in group (1) sequences; immediately before the goal or goals in group (2) sequences; before the pleonastically marked actor when no goal is expressed, and before or after the pleonastically marked actor when the goal is expressed and in position next to the verb in group (3) sequences. The formulas, then, may be extended to include indirect objects as follows: group (1) A ± ... Pc V; group (2) A ± ... Pc G ± G V; group (3) [A ± (... Pc ∼ G) A V] ∼ [A (A + ... Pc) ∼ (... Pc + A) G V].

Particle Pb may introduce an utterance and/or follow immediately after the actor. The symbols may be rearranged as follows to indicate the occurrences of particle Pb:

± Pb A ±(Pb ∼ ... Pc) ±A V

± Pb A ... Pc G V

In the specific formulas in the subsections below, all morphemes within parentheses preceding the alternation sign are to be considered as a unit alternating with all morphemes within the parentheses following the alternation sign.

3.1. Group (1) A V

(A ± ... Pc V)

Nb ± 1 ± 2 ± Pb V ± (41 + 42)

wa wy *I descend* (Nb Vcd); wame wy *we descend* (Nb + 2 Vcd); wakhwame wy *we shall descend* (Nb + 1 + 2 Vcd); wakhwa püi *I shall arrive* (Nb + 1 Vca); wa ca *I stand* (Nb Vad); wakhwa ca *I shall stand* (Nb + 1 Vad); kekhwa ca *he will stand* (Nb + 1 Vad); wa ipen tę *I come* (Nb Pb Vcc); wakhwa ipen tę *I shall come* (Nb + 1 Pb Vcc); wa hama tę *I go* (Nb Pb Vcc).

Nb ± 1 ± 2 10 + Pc ± 2 + V

wame ato wy *we descend for you* (*sing.*) (Nb + 2 12 + Pc Vcd); wame tome wy *we descend for them* (Nb + 2 13.1 + Pc +2 Vcd); wame atome wy *we descend for you* (*pl.*) (Nb + 2 12 + Pc + 2 Vcd); ke pa?to wy *he descends for us* (Nb 14 + Pc Vcd); wakhwame atome wy *we shall descend for you* (*pl.*) (Nb + 1 + 2 12 + Pc + 2 Vcd); wakhwa hama tę *I shall go* (Nb + 1 Pb Vcc); kekhwa tow *he will fly* (Nb + 1 Vca); wakhwa khwę *I shall eat* (Nb + 1 Vab); wa khwęwnawe *I do not eat* (Nb Vab + 41 + 42); wa kacəwnawe *I do not withdraw* (Nb Vab + 41 + 42); keme kacəwnawe *they do not withdraw* (Nb + 42 Vab + 41 + 42); ± Pb ±2 + (10 ∼ ± 10 + 20) + V + 41; wa hǫt *he slept* (Pb 23 + Vba + 41); wa ŋǫt *you* (*sing.*) *slept* (Pb 22 + Vba + 41); wa meijǫt *we slept* (Pb 2 + 11 + 21 + Vba + 41); ijopiw *I climbed* (11 + 21 + Vbb + 41); meijopiw *we climbed* (2 + 11 + 21 + Vbb + 41); wa iwyk *I descended* (Pb 11 + Vcd + 41); meiwyk *we descended* (2 + 11 + Vcd + 41); pawyk *we* (*dual incl.*) *descended* (14 + Vcd + 41); i?tyk *he died* (13.1 + Vcd + 41); wa ikhom *I already drank* (Pb 11 + Vcc + 41); akhom *you drank* (12 + Vcc + 41); i?khom *he drank* (13.1 + Vcc + 41); wa ipǖi *I arrived* (Pb 11 + Vca + 41); wa apǖi *you arrived* (Pb 12 + Vca + 41).

±Pb ± 2 + 10 + Pc V + 41 ± 42

ipi kamen *I played* (11 + Pc Vda + 41); meipi kamen *we played* (2 + 11 + Pc Vda + 41); papi kamen *we* (*dual incl.*) *played* (14 + Pc Vda + 41); meapi kamen *you* (*pl.*) *played* (2 + 12 + Pc Vda + 41); wa ite khwęw *I already ate* (Pb 11 + Pc Vab + 41); wa ite khwę wnawe *I have not already eaten* (Pb 11 + Pc Vab + 41 + 42).

3.2. Group (2) A G ±G V

(A ± ... Pc G ±G V)

Nb ± 1 ± 2 ± 2 + 10 + V ± (41 + 42)

ke akukhi *he asks you* (*sing.*) (Nb 12 + Vaa); ke pakukhi *he asks us* (*dual incl.*) (Nb 14 + Vaa); wa meakukhi *I ask you* (*pl.*) (Nb 2 + 12 + Vaa); wa apy *I get you* (Nb 12 + Vab); wa kupy *I get him* (Nb

13.2 + Vab); wakhwa kupy *I shall get him* (Nb + 1 13.2 + Vab); wakhwa apy *I shall get you* (Nb + 1 12 + Vab); wakhwa kucü *I shall place it* (V base cü) (Nb + 1 13.2 + Vab); wakhwa hacü *I shall place them* (Nb + 1 23 + Vab); wakhwa meciwnawe *we shall not place it* (V base ci) (Nb + 1 2 + Vab + 41 + 42); wakhwame ipywnawe *I shall not take one (it?)* (Nb + 1 + 2 11 + Vab + 41 + 42).

Nb 20 + V

wa hǔ?kataatak *I bite him* (Nb 23 + Vaa); ka hǔ?kataatak *You bite him* (Nb 23 + Vaa); ke hǔkataatak *he bites him* (Nb 23 + Vaa).

Nb ± 1 ± 2 ± 10 + 20 + V

wakhwa ijocwy *I will shoot me* (Nb + 1 11 + 21 + Vbb); wakhwa ŋocwy *I will shoot you (sing.)* (Nb + 2 22 + Vbb); wakhwa hocwy *I will shoot him* (Nb + 2 23 + Vbb); kekhwa ijü?kataatak *he will bite me* (Nb + 2 11 + 21 + Vaa); wakhwame hacwy *we shall throw them away* (Nb + 1 + 2 23 + V); wakhwa incek *I shall shoot with an arrow* (Nb + 1 24 + Vaa); wa hakhjep *I cut him* (Nb 23 + Vaa); wa ŋakhjep *I cut you* (Nb 22 + Vaa).

Nb ± 1 ± 2 Na V ± 41 ± 42

wa kukhon hǫ *I give a gourd* (Nb Na V); kekhwa hici kukhi *he will ask his wife* (Nb + 1 23 + Na Vaa); wa kehe co *I hang up the basket* (Nb Na Vab); wakhwa po cek *I shall shoot the antelope* (Nb + 1 Na Vaa); wa kwo pawnawe *I do not hear the pig* (Nb Na Vab + 41 + 42); wa po pawnawe *I do not hear the antelope* (Nb Na Vab + 41 + 42); wakhwa ita py *I shall get it* (Nb + 1 Na Vab); wakhwa ita pywnawe *I shall not get it* (Nb + 1 Na Vab + 41 + 42); wa ita pywnawe *I do not get it* (Nb Na Vab + 41 + 42); wa itaje ?khen?khennawe *I do not break them* (Nb Na + 2 Vac); wa ita me *I throw it away* (Nb Na Vac); ka ita me *you throw it away* (Nb Na Vac); ke ita me *he throws it away* (Nb Na Vac); wame ita me *we throw it away* (Nb + 2 Na Vac); kume ita me *we (dual incl.) throw it away* (Nb + 2 Na Vac); wakhwame ita me *we shall throw it away* (Nb + 1 + 2 Na Vac).

Pb 10 + Pc (10 ~ ± 10 + 20) + V + 41

wa kute apęw *he lifted you (sing.)* (Pb 13.2 + Pc 12 + Vab + 41); wa kute ipęw *he lifted me (or him)* (Pb 13.2 + Pc 11 + Vab + 41); wa ite ipyw *I grabbed him* (Pb 11 + Pc 11 + Vab + 41); wa ite apyw *I grabbed you* (Pb 11 + Pc 12 + Vab + 41); wa kute ipyw *he grabbed him* (Pb 13.2 + Pc 13.1 + Vab + 41); wa ite hacwyw *I threw them away* (Pb 11 + Pc 23 + Vab + 41); wa iteme hacwyw *we (excl.) threw them away* (Pb 11 + Pc + 2 23 + Vab + 41); wa pa?te hacwyw *we (dual incl.) threw them away* (Pb 14 + Pc Vab + 41); wa pa?teme hacwyw *we (incl.) threw them away* (Pb 14 + Pc + 2 Vab + 41); wa ite incek *I shoot with an arrow* (Pb 11 + Pc 24 + Vbb + 41); wa ite acam *I put you on your feet* (Pb 11 + Pc 12 + Vad + 41); wa ite ham *I put him on his feet* (Pb 11 + Pc 13.1 + Vad + 41); wa ite meham *I put them on their feet* (Pb 11 + Pc 2 + 13.1 + Vad + 41); wa ite hiw *I placed it* (Pb 11 + Pc 13.1 + Vab + 41); wa ite aciw *I placed you* (Pb 11 + Pc 12 + Vab + 41); wa kute ijǔ?kataatak *he bit me* (Pb 13.2 + Pc 11 + 21 + Vaa).

± Pb 10 + Pc + 1 ± (± 10 + 20) + N V

wa ite wapti ?khwün *I withdrew many thorns* (Pb 11 + Pc Na Vac + 41); pate pajawko men *we threw our saliva, we spit* (14 + Pc 14 + 21 + Na Vac + 41); wa ite kehe cow *I have hung up the basket* (Pb 11 + Pc Na Vab + 41); wa ite wapo cüw *I placed the knife* (Pb 11 + Pc Na Vab + 41); wa kute ita pyw *he grabbed him (it?)* (Pb 13.2 + Pc Na Vab + 41); wa ite ita men *I threw it away* (Pb 11 + Pc Na Vac + 41); wa iteme ita men *we (excl.) threw it away* (Pb 11 + Pc + 2 Na Vac + 41); wa pa?teme ita men *we (incl.) threw it away* (Pb 14 + Pc + 2 Na Vac + 41); wa kute hici kukhi *he asked his wife* (Pb 13.2 + Pc 23 + Na Vaa + 41); wa ite hici kukhi *I asked his wife* (Pb 11 + Pc

23 + Nab Vaa + 41); wa kute ita pęw *he lifted it* (Pb 13.2 + Pc Na Vab + 41);

Na Pc [(10 ~ 20) + V + 41 ~ N V + 41]

kaŋə te acar *the snake bit you* (Na Pc 12 + Vab + 41); tywkhnę te khwuawe pyw *kingfisher took a little arrow* (Na Pc Na 31 Vab + 41); pyt te hǫmpün *sun saw him* (Na Pc 23 + Vac + 41).

Nb ± 1 10 + Pc (20 + V ~ Na V)

wakhwa amą hawę *I'll tell you* (Nb + 1 12 + Pc 23 + Vac); kakhwa kumą hawę *you'll tell him* (N + 1 13.2 + Pc 23 + Vac); kekhwa imą hawę *he'll tell to me* (Nb + 1 11 + Pc 23 + Vac); kekhwa kmą *he'll tell to him* (Nb + 1 13.2 + Pc 23 + Vac); wa amę kwkhon hǫ *I give a gourd to you* (Nb 12 + Pc Na V).

Pb 10 + Pc ± 1 + 10 + Pc 20 + V + 41

wa ite amą hawen *I told you* (Pb 11 + Pb 12 + Pb 23 + Vac + 41); wa ate imą hawen *you* (*sing.*) *told me* (Pb 12 + Pc 11 + Pc 23 + Vac + 41); wa kute meamą hawen *he told you* (*pl.*) [or possibly *they told you* (*sing.*)] (Pb 13.2 + Pc 2 + 12 + Pc 23 + Vac + 41); wa ite kumą hawen *I told him* (Pb 11 + Pc 13.2 + Pc 23 + Vac + 41).

± Pb (10 + Pc ~ Nb + 1) Na 20 + V + 41

ite kukhon japyn *I picked up the gourd* (11 + Pc Na 21 + Vac + 41); ate kukhon japyn *you picked up the gourd* (12 + Pc Na 21 + Vac + 41); kute kukhon japyn *he picked up the gourd* (Nb Pc Na 23 + Vac + 41); wakhwa ita japy *I shall pick it up* (Nb + 1 Na 21 + Vac; wa kahy jaco *I hang up the peanuts* (Nb Na 21 + Vab); wa ite kahy ncow *I have hung up the peanuts* (Pb 11 + Pc Na 24 + Vab + 41); wa ite wapo jacow *I have hung up the knives* (Pb 11 + Pc Na 21 + Vab + 41); wa ite katy jacow *I have hung up the mats* (Pa 11 + Pc Na 21 + Vab + 41); wa ite pį jakhjep *I cut the leaves* (Pb 11 + Pc Na 23 + Vaa + 41); wakhwa kukhon jacü *I shall place the gourd* (Nb + 1 Nb 21 + Vab); wakhwa kukhon japy *I shall take the gourd* (Nb + 1 Na 21 + Vab).

Nb + 1 ± 2 10 + Pc ± 1 20 + 20 + V

wakhwa mą (*amą) aųnjawę *I'll tell you* (Nb + 1 + 2 12 + Pc 13.3 + 24 + Vac); kakhwa im (*imą) aųjawę *you'll tell me* (Nb + 1 11 + Pc 13.3 + 24 + Vac); kukhwa kum (*kumą) aųjawę *we* (*dual incl.*) *shall tell him* (Nb + 1 13.2 + Pc 13.3 + 24 + Vac); kukhwame kmąme aųjawę *we* (*incl.*) *shall tell them* (Nb + 1 + 2 13.3 + 24 + Vac); wakhwame kmąme aųjawę *we shall tell them* (Nb + 1 + 2 13.2 + Pc + 2 13.3 + 24 + Vac).

3.3. Group (3) A ± G A ± G V

[A ± (... Pc ~ G) A V] ~ [A (A + ... Pc) ~ (... Pc + A) G V]

Nb ± 1 ± 2 ± Pb ± 2 + 10 + V ± (41 + 42)

wakhwa itemnawe *I shall not go* (Nb + 1 11 + Vcc + 41 + 42); wa ipen itemnawe *I do not come* (Nb Pb 11 + Vcc + 41 + 42); wakhwa ipen itemnawe *I shall not come* (Nb + 1 Pb 11 + Vcc + 41 + 42); wame imǫwnawe *we do not go* (Nb + 2 11 + Vab + 41 + 42); wakhwa hama meimǫwnawe *we shall not go* (Nb + 1 Pb 2 + 11 + Vab + 41 + 42); kekhwa ʔtownawe *he will not fly* (Nb + 2 13.1 + Vca + 41 + 42); wakhwa ikhüwnawe *I shall not sing* (Nb + 2 11 + Vcb + 41 + 42); kekhwa ʔkhüwnawe *he will not sing* (Nb + 2 13.1 + Vcb + 41 + 42); wa icamnawe *I do not stand* (Nb 11 + Vad + 41 + 42); ke hamnawe *he does not stand* (Nb 13.1 + Vad + 41 + 42); wakhwa iwyknawe *I shall not descend* (Nb + 1 11 + Vcd + 41 + 42); wakhwa ipüinawe *I shall not arrive* (Nb + 1 11 + Vca + 41 + 42); wakhwa icəwnawe *I shall not enter* (Nb + 1 11 + Vab + 41 + 42); kekhwa həwnawe *he will not enter* (Nb + 1 13.1 + Vab + 41 + 42); wakhwa ijetnawe *I shall not hang* (Nb + 1 11 + Vca + 41 + 42); wakhwa ityknawe *I shall not die* (Nb + 1 11 + Vcd + 41 + 42); wakhwa meikato *we shall arrive* (Nb + 1 2 + 11 Vcb); wakhwa meikatownawe *we shall not arrive* (Nb + 1 2 + 11 + Vbc + 41 + 42).

Nb + 1 20 + V ± (41 + 42)

wakhwa jitǫt *I shall remain* (Nb + 1 21 + Vba); kakhwa ŋitǫt *you (sing.) will remain* (Nb + 1 22 + Vba); kahkwa ŋitǫtnawe *you (sing.) will not remain* (Nb + 1 22 + Vba + 41 + 42).

Nb Pb ± 2 + 10 + V ± (41 + 42)

wa apu icy *I do my dance* (Nb Pb 11 + Vaa); ku apu pancy *we (dual incl.) do our dance* (Nb Pb 14 + Vaa); wa apu meicy *we (excl.) do our dance* (Nb Pb 2 + 11 + Vaa); wa apu icynawe *we do not do our dance* (Nb Pb 11 + Vaa + 41 + 42).

± Pb 10 + Pc ± Pb 10 + V + 41

wa ite icam *I stood up* (Pb 11 + Pc 11 + Vad + 41); wa (a)te acam *you stood up* (Pb 12 + Pc 12 + Vad + 41); wa kute ham *he stood up* (Pb 13.2 + Pc 13.1 + Vad + 41); wa kute meham *they stood up* (Pb 13.2 + Pc 2 + 13.1 + Vad + 41); hama ite imǫw *I went* (Pb 11 + Pc 11 + Vab + 41); wa ite apu icy *I did my dance* (Pb 11 + Pc Pb 12 + Vab + 41); wa pate apu pancy *we (dual incl.) did our dance* (Pb 14 + Pc Pb 14 + Vab + 41).

Na ± Pc 10 + V

tepkwyti te ham *tepkwyti stood up* (Na Pc 13.1 + Vad + 41); pyt i?tyk *sun died* (Nb 13.1 + Vcd + 41).

Nb + 1 10 + Pc 10 + V

kakhwa ipe ame *you will throw away mine* (Nb + 1 11 + Pc 12 + Vac); kakhwa kupe ame *you will throw away his* (Nb + 1 13.2 + Pc 12 + Vac); kekhwa kupe kume *he will throw away his* (Nb + 1 13.2 + Pc 13.2 + Vac); kekhwa ipe kume *he will throw away mine* (Nb 1 + 11 + Pc 13.2 + Vac); kekhwa ape kume *he will throw away yours* (Nb + 1 12 + Pc 13.2 + Vac).

± Pb (10 + Pc ~ N Pc ~ Nb) (10 + Pc ~ N Pc) 10 + V + 41 ± 42

wa ite ato iwyk *I descended for you* (Pb 11 + Pc 12 + Pb 11 + Vcd + 41); wa ate ito awyk *you descended for me* (Pb 12 + Pc 11 + Pc 11 + Vcd + 41); kute ?to iwyk *he descended for him* (13.2 + Pc 13.1 + Pc 11 + Vcd + 41); ite hǔwkhua mǫ icǝw *I entered his house* (11 + Pc Na Pc 11 + Vab + 41); ite hǔwkhua mǫ icǝwnawe *I did not enter his house* (11 + Pc Na Pc 11 + Vab + 41 + 42); pytwywe te puwe ?nǫ ipyw *moon grabbed the bunch of burity* (Na Pc Na Pc 11 + Vab + 41); kute hǔwkhua mǫ hǝw *he entered his house* (13.2 + Pb Na Pc 13.1 + Vab + 41);ke hǔwkhua mǫ hǝwnawe *he does not enter his house* (Nb Na Pc 13.1 + Vab + 41 + 42).

Na Na + 1 ± (10 + Pc ~ 20 + Na Pc) Na V

wopkho kekhwa kukhon hǫ *wopkho will give a gourd* (Na Nb + 1 N V); wopkho kekhwa amǫ kukhon hǫ *wopkho will give gourd to you* (Na Nb + 1 12 + Pc N V); wopkho kekhwa hįci mǫ kukhon hǫ *wopkho will give a gourd to his wife* (Na Nb + 1 23 + Nab Pc Na V).

Pb 10 + Pc 10 + Pc ± 10 + 20 + 20 + V + 41

wa ite amǫ ijǔjawen *I told you* (Pb 11+ Pc 12 + Pc 11 + 21 + 23 + Vac + 41); wa ate imǫ ŋǔjawen *you told me* (Pb 12 + Pc 11 + Pc 22 + 23 + Vac + 41); wa kute imǫ hǔjawen *he told me* (Pb 13.2 + Pc 11 + Pc 23 + 23 + Vac + 41).

4. The following is a sample list of Kraho morphemes, gleaned from the translated part of the data. The list includes noun, verb, and particle bases and their affixes. The specific classes and subclasses into which the bases and affixes have been grouped in the morphology are indicated in the list by symbols following the English meanings. As in the morphology, N, V, and P represent the three classes of bases; lower case letters indicate the subclasses. When the subclasses have not been determined from the data, the general classifications alone are given.

Two verbs, cek *shoot with an arrow* and co *hang*, must be preceded by affix 24 (n- ~ in-) whenever they occur in association with certain specific noun bases. These noun bases are marked in the following list by a subscript $_n$ following the subclass designation of the noun base. Thus, khje *thigh* Naa$_n$.

After affixes, the two-digit number indicates to what decade the affix has been assigned in the morphology, and its specific number in that decade.

The order of listing conforms to the English alphabet, with the insertion of ü after u, ə after e, ŋ after n, nasalized vowels after the corresponding oral vowels, and glottal stop at the end.

a- *second person* 12; achun *manioc leaf-cutting ant* Na; aipen ~ ipen toward the speaker Pb; akə *seeds* (*that grow in pods and are strung as beads*) Na; amkhwo ~ amkwo *sun heat, sun light* Na; antua *renew, change* V; apu *alone* Pb; au- ~ au ~ aųn- *third person* 13.3; awieti ~ awiete *hammock* Na_n; awko *saliva* Na; awihy ~ awuihy *rice* Na.

ca *stand, put on feet* Vad; ca ~ cha *bite* Vab; cam *because* Pb; cek ~ chek *shoot with an arrow* Vaa; cet *roast* Vaa; cəm *but* Pb; chə ~ cə ~ cho *enter* Vab; chuw *come out* V; chuw *pus* (*of the ear*) Na; chwa ~ cwa *teeth* Naa; ci *place* Vab; ciktǫ *covered basket* Na; cjə *hole* Na; cjy *shirt or skirt trimmed with gourd tips* Na; co *hang* Vab; cuije ~ cwywe *also* Pb; cum ~ cjum ~ hum *man, father* Na; cü *place* (*in*) Vab; cwa *bathe* Vcb; cwy *shoot* Vbb; cwy *throw away* Vab; cy *do one's ceremony, do one's dance* Vaa; cy *move with all one's belongings* V.

hama *direction from* Pb; hawen *forest* Na; he ~ heh *hunt* Vbb; həpə *no* Pb; hi ~ hį *bone, meat* Na_n; hihe ~ hihi *door* Na; hiwe *thin* Pa; ho- ~ hi- ~ hu- ~ ha- ~ h- ~ hǫ- ~ hǖ- ~ hų- *third person* 23; hǫ *give* V; hųcwy *place in inclined position* Vab; hy *plait* V; hy *corn* Na.

i- *first person* 11; ikuche *lightning* Na; ince ~ incǖ *mother* Na; ita- *third person* 13.4; itaje- *third person plural* 15; iwom *bush* Na; i?- ~ i- ~ ?- ~ zero ~ change of phoneme (c > h, cw > w) *third person* 13.1; įci- *wife* (*his, your*) Nab;

jawa *feather* Na; jawte *feast* Na; jet ~ ajet *hang* Vca; jo- ~ ji- ~ ju- ~ ja- ~ jom- ~ jǫ- ~ j- *indicator of expressed antecedent* ba; jot ~ jet *sweet potato* Na; jy ~ jǖ *sit* Vbb.

ka *second person* Nb; kacə ~ kacü *withdraw* (*one*) Vab; kache *star* Na; kacwa *salt* Na; kahai *woman* Na; kahy ~ kahy ~ kahu *peanut* Na_n; kakhwi ~ kakhwį *strike* Vac; kakwǫ *clouds* Na; kamę *play* Vda; kanoti ~ kayoti *name of dance which imitates rattle snake* Na; kaŋa ~ kaŋǫ *snake* Na; kapa ~ ka?pa *turn about, withdraw* Vaa; kapot *grow* Vca; kapǫ *dig* V; kapu *name* Na; kapwən *land turtle* Na; kapwo *afterbirth* Na; ka?hyh *hit* V; ka?ty *sleeping mat* Nab; kapwü *heal* V; kawan *battle* Na; kawa?atu *metal digging tool* Na; kawǫwe *a clean place, meadow* Na; kawįwe *chicken* Na; kawo *small brush deer*; kataatak ~ ?kataatak *wound, bite* Vaa; kato *turn, arrive, find* Vcb; katǫk *saki monkey* Na; katut *back* Na; katy ~ katy *mat* Na_n; ke *third person* Nb; kehe *basket* Nb; kenpoiti *a white clay* Nb; kha *whiten* V; khap ~ khop *name of wood used for staffs* Na; khen *cliff* Na; khen *in* Pc; khə *fat* Pa; khə ~ kho *plaza of village* Na; khəi ~ khai *up* Pc; khəm *to, in, from* Pc; khən *by* Pc; khənpe *be left behind, deserted* V; khǫ *fat* Pa; khija ~ kija *oven* Na; khį *hair* Naa; khje *thigh* Naa_n; khjep *cut* Vaa; khję *play* Vdb; khmį *village* Nab; kho *smoke* Vab; khok *wind* Na; khop *fingernail* Nab; khopo ~ khuopo *staff* Na_n; khopwe *housefly* Na; khowo *name of fish* Na; khǫ *drink* Vcc; khua *marry* V; khui *ear plug* Nab; khumca ~ khunce *suck* (*sugar cane*) Na; khuük ~ khuüki ~ kwük *bed* Na; khü *shout, chant* Vcb; khü *breast* Naa_n; -khwa *future* 1; khwa ~ kwa *hand, arm* Nab_n; khwawe *little* Pa; khwe *plant* V; khwe *house* (*isolated*) Naa; khwe *nose* Nab; khwę *eat* Vab; khwǫ ~ kwą *head* Naa; khwį *break* Vca; khwot *be rested* Vca; khwü ~ ?khwü *withdraw* (*many*) Vac; khwy *defecate* Vab; khwyw ~ kwyw *manioc* Na; ko *water* Na; Na; koppę *claws* Nab; kot *lest, because* Pb; ko?pip *fan* Nab; ku *first person dual inclusive* Nb; ku- ~ k- *third person* 13.2; kucu *do* (*intrans.*) V; kuhih ~ kuhi *bow* Na_n;

kuhon *build a fire* V; kuhy *plait, weave* V; kukhi *ask* Vaa; kukhjen *short-tailed rodent* Na; kukhoj *kind of monkey* Na; kukhon ~ ku?khon *gourd* Na; kukhwyt ~ kwukwyt ~ tak *tapir* Na; kumtüm ~ Küm?tũm *cappybara* Na; kupe *stranger* Na; kupu *cake* Na; kupüt *howler monkey* Na; kuwa ~ khuwa *kill* Vac; kuwę ~ kuwį ~ kuwi *speak angrily* Vaa; ku?hi *sneak along* V; ku?kwą *bee* Na; küto *build a fire* V; kwa *child* Naa; kwa ~ wkwa *home* Nab; kwat ~ ?kwat *gourd* Nab; kwą ~ kwą *head* Naa; kwo *pig* Na; kwuwa ~ kuwa ~ khwa *arrow* Na; kwü *dry* Pa; kwün *feather* Na; ma *have* V; ma ~ mą ~ ?mą ~ mo *ownership*; *motion towards* Pc; mako *handbag* Nab; mcu *deny* Vda; me *throw away, lose* Vac; me- ~ -me ~ -je *pluralizer of* person affixes 2; mej *alligator* Na; meja ~ mja *yes* Pb; mə ~ mǫ ~ mo ~ ma ~ mų̈ locative; indirect object Pc; mą *up* Pb; mą ~ mü *watch* Vab; mąkwük *table* Na; mǫ *go, come* Vab; müwja *perhaps* Pb.

n- ~ in- *verb goal, third person* 23; -nawe *negative* 42; ne ~ me *and* Pb; nəemha *no* Pb; ną ~ ?ną *accusativizer* Pc; nǫ *lie down* V; ntot *navel* Nab; ŋo- ~ ŋi- ~ ŋu- ~ na- ~ ŋǫ ~ ŋ *you* (*sing.*) 22.

ǫw ~ ǫt ~ w ~ t ~ ŋǫw *sleep* Vba.

pa *arm* Naa$_n$; pa *hear* Vab; pak *ear* nab; pan *food* Nab; par *foot* Naa; patok *bow, pellet bow* Na; pe *be deserted* Vaa; pe *genitivizer*; *from* Pc; pę *extend, show, lift up* Vab; pęw *girl's or woman's name* Na; pən *large blue parrot* Na; pətwy ~ pətwü *horn* (*made from a gourd*) Na; pi ~ api *climb* Vbb; -pi *subjectivizer* Pc; pije ~ pje *ground* Na; piti *all* (*inanimate*) Pa; pį *leaf* Na; pį *ladder* Na; po *antelope* Nab; poi *pass walking* Vb; pot *ant-eater* Na; puipa *live, arise, arrive* V; pupu ~ pu *see* Vac; puwho ~ pühwo *tobacco* Na; püi ~ pų̈i *arrive* Vac; pwəm *want* Vaa; pwo *frog* Na; pwo *grab* Vaa; pwǫ (*my*) *woman*, (*my*) *wife* Naa; pwy *path* Nab; pwy *name* Naa; pwywe *game* (*animal*) Na; py *take, get* Vab; py *pick up, take up* Vac; py *fall* Vad; pycit *one* Na; pykhwo *urucum* Nab.

te *subjectivizer* Pc; te *leg* Naa; tep *fish* Na; tepkwyti *kingfisher* Na; te?tet *white man* Na; tę *come, go* Vcc; təm *raw* Pa; -ti *big* 32; to ~ tǫ *eyes* Naa$_n$; to ~ ?to *for, by means of* Pc; to *do* Vac; ton *armadillo* Na; tow *fly* Vca; tǫ *brother* Naa$_n$; tǫi ~ toį *sister* Naa; tǫt *remain, refuse to go* Vba; tua *new* Pa; tum *old* Pb; twy *pound, make* V; twym *fat* Pa; ty *die* Vcd; tykwe *be dirtied black* Vaa.

-w ~ -n ~ -k ~ -m ~ zero *past tense*; *stem formative for negative* 41; wa *already* Pb; wa *first person* Nb; wapo *knife* Na$_n$; -we *little, diminutive* 31; we *lose* (*a person*) Vab; wej *old* Pa; wę *tell* Vac; wę *roll* V; wo?ti *boa constrictor* Na; wy *descend* Vcd.

ywop ~ wop *dog* Nab. ?khę?khę ~ ?khen?khen *break* (*many things*) Vac; ?khü ~ khü *sheath* Na; ?kuna ~ kuna *all* (*animate*) Pa; ?nǫ *other* Pa; ?pym *fall* V; ?to ~ pto *tongue* Nab.

5. In this section the V, N, and P bases are relisted according to the morpheme class and subclass to which they belong. For example, all Vaa bases are listed together in one group. A number is assigned to each base in each group. This makes it possible to specify a certain base by giving the morpheme class and subclasses to which it belongs, as well as the identifying number. Thus, Vaa4 would be the base kapa, which is under Vaa and numbered 4. The meanings of the forms given in the following list may be found in the alphabetical list preceding. Only one alternant of any morpheme is given below.

5.1.0. V bases, subclass unknown: 1 antua, 2 chuw, 3 cy, 4 hǫ, 5 hy, 6 ka?hyh, 7 kapǫ, 8 kapwü, 9 kha, 10 khənpe, 11 khua, 12 khwe, 13 ku?hi, 14 kucu, 15 kuhon, 16 kuhy, 17 küto, 18 ma, 19 nǫ, 20 puipa, 21 twy, 22 wę, 23 ?pym.

5.1.1. Vaa bases: 1 cek, 2 cet, 3 cy, 4 kapa, 5 kataatak, 6 khjep, 7 kukhi, 8 kuwę, 9 pe, 10 pwəm, 11 pwo, 12 tykwe.

Vab bases: 1 ca, 2 cha, 3 ci, 4 co, 5 cü, 6 hucwy, 7 kacə, 8 kho, 9 khwę, 10 khwy, 11 mą, 12 mǫ, 13 pa, 14 pą, 15 py, 16 we.

Vac bases: 1 kakhwi, 2 khwį, 3 kuwa, 4 me, 5 pupu, 6 py, 7 to, 8 wę, 9 ʔkhęʔkhę.

Vad bases: 1 ca, 2 py.

5.1.2. Vb bases, subclass unknown: 1 poi.

Vba bases: 1 tǫt, 2 ǫt.

Vbb bases: 1 cwy, 2 jy, 3 pi.

5.1.3. Vca bases: 1 jet, 2 kapot, 3 khwot, 4 püi, 5 tow.

Vcb bases: 1 cwa, 2 kato, 3 khü.

Vcc bases: 1 khǫ, 2 tę.

Vcd bases: 1 ty, 2 wy.

5.1.4. Vda bases: 1 kamę, 2 mcu.

Vdb bases: 1 khje.

5.2.1. Na bases, subclass unknown: 1 achun, 2 akə, 3 amkhwo, 4 awieti, 5 awko, 6 awihy, 7 chuw, 8 ciktǫ, 9 cjə, 10 cjy, 11 cum, 12 hawen, 13 hi, 14 hihe, 15 hy, 16 ikuche, 17 ince, 18 iwom, 19 jawa, 20 jawte, 21 jot, 22 kache, 23 kacwa, 24 kahąi, 25 kahy, 26 kakwǫ, 27 kaŋa, 28 kanoti, 29 kapu, 30 kapwən, 31 kapwo, 32 kawan, 33 kawąwe, 34 kawjwe, 35 katǫk, 36 katut, 37 katy, 38 kawaʔatu, 39 kehe, 40 kenpoiti, 41 khap, 42 khen, 43 khə, 44 khija, 45 khok, 46 khopo, 47 khopwe, 48 khowo, 49 khumca, 50 khuük, 51 khwyw, 52 ko, 53 kuhih, 54 kukhjen, 55 kukhoj, 56 kukhon, 57 kukhwyt, 58 kumtüm, 59 kupe, 60 kupe, 61 kupu, 62 kupüt, 63 kuʔkhwą, 64 kwuwa, 65 kwo, 66 kwün, 67 mej, 68 mąkwük, 69 patok, 70 pęw, 71 pən, 72 pətwy, 73 pije, 74 pį, 75 pį, 76 pot, 77 puwho, 78 pwo 79 pwywe, 80 pycit, 81 taʔti, 82 tep, 83 tepkwyti, 84 teʔtet, 85 ton, 86 wapo, 87 woʔti, 88 ʔkhü.

Naa bases: 1 chwa, 2 khį, 3 khje, 4 khü, 5 khwe, 6 khwə, 7 kwa, 8 kwą, 9 pa, 10 par, 11 pwǫ, 12 te, 13 to, 14 tǫ, 15 tǫi.

Nab bases: 1 įci, 2 kaʔty, 3 khnį, 4 khop, 5 khui, 6 khwa, 7 khwe, 8 koppę, 9 koʔpip, 10 kwa, 11 kwat, 12 mako, 13 ntot, 14 pak, 15 pan, 16 pykhwo, 17 ywop, 18 ʔto.

5.2.2. Nb bases, no subclasses: 1 wa, 2 ka, 3 ke, 4 ku.

5.3. Pa bases: 1 hiwe, 2 khə, 3 khą, 4 khwawe, 5 kwü, 6 piti, 7 təm, 8 tua, 9 twym, 10 wej, 11 ʔkuna, 12 ʔnǫ.

Pb bases: 1 aipen, 2 apu, 3 cam, 4 cəm 5 cuije, 6 hama, 7 həpə, 8 kot, 9 mą, 10 meja, 11 müwja, 12 ne, 13 nəmha, 14 tum, 15 wa.

Pc bases: 1 khen, 2 khəi, 3 khəm, 4 khən, 5 ma, 6 mə, 7 ną, 8 -pi, 9 pe, 10 te, 11 to.

6. The following text is written first in terms of a morphological index (substitute symbols) given in **5**, above, and then repeated in phonemic transcription. The substitute symbols designate a given morpheme by giving the major form class and subclass to which it belongs, along with the number which identifies the morpheme specifically. Commas are used to separate morphemes within a word, spaces to separate words, periods to mark sentence final.

Text Written in Substitute Symbols

Na83 [*Kingfisher*]

23, Na53 [*his bow*] Pc7 [*object*] 11, Vcb2, 41 [*I found*]. 11, Pc10 [*I subject*] Na64, 31 [*arrow little*] Vab15, 41 [*took*]. 11, Pc10 [*I subject*] Na83 [*kingfisher*] Vab13, 41 [*heard*]. Pb15 [*already*] 11, Vcb3, 41 [*I shouted*]. Na83 [*kingfisher*] Pc11 [*by means of*] 13.1, Vca5, 41 [*flew away*]. Na83 [*kingfisher*] 11, 21, Vbb1, 41 [*I it-expressed shot*]. Na83 [*kingfisher*] Pc10 [*subject*] Na73 [*ground*] Pc3 [*to*] Vad2, 41 [*fell*]. Nb3, 1 [*he will*] Vca5, 42 [*fly not*]. Pb15 [*already*] 11, Pc10 [*I subject*] Na83 [*kingfisher*] 21, Vac6, 41 [*it-expressed picked up*]. 11, Pc10 [*I subject*] 13.4, Vaa2, 41 [*it roasted*].

The Same Text Written Phonemically[5]

tepkwyti [Kingfisher]

ho-kuhi [*his bow*] ʔnę [*object*] i-kuto-w [*I found*]. i-te [*I subject*] khwa-we [*arrow little*] py-w [*took*]. i-te [*I subject*] tepkwyti [*kingfisher*] pa-w [*heard*]. wa [*already*] i-khü-w [*I shouted*]. tepkwyti [*kingfisher*] to [*by means of*] ʔ-tow [*flew away*]. tepkwyti [*kingfisher*] i-jo-cwy-w [*I it-expressed shot*]. tepkwyti [*kingfisher*] te [*subject*] pije [*ground*] khəm [*to*] py-m [*fell*]. ke-khwa [*he will*] tow-nawe [*fly not*]. wa [*already*] i-te [*I subject*] tepkwyti [*kingfisher*] ja-py-n [*it-expressed picked up*]. i-te [*I subject*] ita-cet [*it roasted*].

[5] Hyphens at morpheme boundaries are simply for convenience of reference to the above.

AFFIXES AND IMPLICIT CATEGORIES IN TOTONAC VERB INFLECTION

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0.1. Techniques of analysis
0.2. Inner vs. outer layers
1. Verb stems
1.1. Static vs. active stems
1.2. Degrees of transitivity
1.3. Implicit categories in stems
1.4. Stem constituency
2. Outer layer formations
2.1. Suffixes
2.2. Prefixes
3. Paradigm of formulas
4. Implicit categories vs. zero morphemes

0.1. The present paper treats the inflection or outer layer formation of Totonac[2] verbs, applying where relevant two techniques of analysis that are somewhat novel and which may be of methodological interest. One of these techniques is the treatment of certain grammatical categories as implicit in stems and affixes rather than as zero morphemes; the implications of this are further discussed in **4.** The other is the classification of verb stems, not simply as transitive vs. intransitive, but by their degrees of transitivity; i.e. by the number of objects which are associated with them. In applying each of these techniques, the other is assumed and its terminology used where relevant; however, either technique could have been applied, with certain modifications, without presupposing the other.

[1] The first author is responsible for the Totonac data and the basic analytical work; the second author has collaborated especially on the analyses arising from the techniques mentioned in **0.1**, and has written section **4** of the paper.

[2] The dialect is that of Zapotitlán de Méndez, Puebla, Mexico; the principal informant was Manuel Arenas. For a description of the phonemic structure see Herman Aschmann, Totonaco Phonemes, IJAL 17.34–43 (1946).

0.2. Inner versus outer layers.

The Totonac verb complex is composed of two well defined layers: (1) the stem proper or inner layer and (2) an outer layer of affixes enclosing it. The criterion for differentiating two layers is essentially a formal one: the outer layer elements in the verb complex always maintain a fixed relative order with each other, while the inner layer ones do not.

The inner layer or stem formative elements have their order determined according to the immediate constituents of the stem with the verb root as the nucleus. Which affixes or groups of affixes are added to each underlying stem form is determined by the meaning and function of these affixes. They are added to the previous complete underlying form as a unit without regard to what its individual components are (except as they determine the class the whole falls into, e.g. passive, ingressive, transitive, etc.). Examples of such layered constituents are: -nu·-[3] *to be inside;* -tuwanu·- *to have one's shoes on* (tuwa- *foot part* + -nu·-); -tatuwanu·- *to put on one's shoes* (ta- ingressive + -tuwanu·-); -tanu·- *to enter* (ta- ingressive + -nu·-); *-tuwatanu·- to enter one's foot* (tuwa- + -tanu·-); -tatuwatanu·- *to have something in one's foot* (ta- passive + -tuwatanu·-).

1. Verb stems.

1.1. Static versus active stems. Verb stems (V) are classified as static (V^s) and

[3] Those forms preceded and followed by a hyphen indicate verb stems (-nu·-, -štu-, etc.); those preceded by a hyphen indicate suffixes (-ni, -nan, -ya·, etc.); those followed by a hyphen indicate prefixes (ka-, š-, kin-, etc.).

active (V^a). Static roots and static derived stems are those which may occur with the stem formative prefix ta- (ingressive) and with it become active; all other stems are active. E.g. -nu·- *to be inside* (V^s), -tanu·- *to enter* (V^a), -káks- *to be quiet* (V^s), -takáks- *to quiet down* (V^a), -ci·q- *to be hid* (V^s), -taci·q- *to hide oneself* (V^a), etc.

1.2. Degrees of transitivity. Verb stems are further classified as intransitive, monotransitive (having one object), bitransitive (having two objects) and tritransitive (having three objects). Verbs with four and even five objects have been observed but they are rare. The symbols V^s and V^a are further qualified by the addition of a digit showing the number of objects: V^{s0}, V^{a0} intransitive verb stems; V^{s1}, V^{a1} monotransitive verb stems; V^{s2}, V^{a2} bitransitive verb stems, etc. E.g. -wila- *to be sitting* (V^{s0}), -tawila- *to sit down-* (V^{a0}), -qa·wila- *to be sitting on ITS*[4] *back* (V^{s1}), -qa·tawila- *to sit down on ITS back* (V^{a1}), -ma·ski·- *to give it to IT* (V^{a2}) -ma·ma·ski·ni·- *to make IT give it to it* (V^{a3}), -li·pu·ma·ma·ski·ni·ni·- *to make IT give it to it in it for such and such a reason* (V^{a5}).

1.3. Implicit categories in verb stems. In all verb stems, the subject is implicitly third person, singular, and identified unless otherwise marked by an affix for first or second person, plural, and/or unidentified subject. E.g. cukuy *he begins* (implicit 3rd sg. ident. subj.); cukuqú·y *they begin* (implicit 3rd ident. subj.; -qú· marks pl. subj.); cukukan *someone begins* (implicit 3rd sing. subj.; -kan marks unident. subj.); cukuqú·-kan *someone* (pl.) *begins* (implicit 3rd subj.; -qú· marks pl.; -kan marks unident. subj.); kcukuy *I begin* (k- marks 1st sing. subj.).

In monotransitive stems, the object is implicitly third person singular unless otherwise marked by an affix for first or second or reflexive person and/or plural. E.g. paši·y *he bathes it* (implicit 3rd sg. ident. subj. and 3rd sg. obj.); paši·qú·y *he bathes them* (implicit 3rd sg. ident. subj. and 3rd obj.; -qú· marks pl.), kimpaši·y *he bathes me* (implicit 3rd sg. ident. subj.; kim- marks 1st sg. obj.).

In multitransitive stems (V^{s2}, V^{a2}, V^{s3}, etc.) one object is implicitly third person singular but may be otherwise marked as in monotransitive stems. The other object or objects are always implicitly third singular and may not be otherwise marked. Such implicit categories as the latter are termed CONSTANT; those which may be otherwise marked are termed TRANSIENT. The transient object is shown by small caps in translation of stem forms. E.g. -ma·ški·- *to give it to HIM* (V^{a2}), -ma·ški·ni- *to give it to him for HIM* (V^{a3}), -li·tá·čuwi·nan- *to speak to him about HIM* (V^{a2}), -tá·li·-čuwi·nan- *to speak to HIM about him* (V^{a2}). The following examples show the transient object in the above last two V^{a2} stems replaced by second person: li·tá·čuwi·nana·n *he speaks to him about you* (sing.), tá·li·čuwi·nana·n *he speaks to you* (sing.) *about him*. Both examples have the same formula (V^{a2} + 71.1 + 101.2), but the transient object (marked by 101.2) differs in its meaningful relation to the two V^{a2} stems which differ in the order of their prefixial morphemes li·- and tá·-.

1.4. Verb stem (or inner layer) constituency is here discussed in very brief outline prior to the detailed treatment of outer layer formation in **2.**

1.4.1. Constituency of intransitive stems (V^{s0}, V^{a0}).

The intransitive stems are of two types: (1) roots (one-morpheme verb stems) and (2) complex or derived stems. These include both V^{s0} and V^{a0} stems.

V^{s0} roots: -nu·- *to be inside*, -ma·- *to be lying down*, -štu- *to be outside*, -ki·- *to be*

[4] The transient object of multitransitive as well as monotransitive verb stems is identified in translations of stem forms by placing that object in italic caps (cf. **1.3**).

open, -ci·q- *to be hid*, -káks- *to be quiet*, -cama- *to be full*, -qaci·- *to be complete*, -cili·s- *to be desolate*.

V^{s0} roots: -án- *to go*, -ni·- *to die*, -paš- *to bathe*, -sput- *to finish*, -cuku- *to begin*, -qus- *to fly*, -kácan- *to hurt*, -wá·yan- *to eat*, -stálánk- *to melt*.

V^{s0} complex stems. The simplest combination is prefix + V^{s0} (root), and the most complex observed is V^{s0} + V^{s0} + V^{s0}. E.g. -áknu·- *to be underground* (ák- *upper part* + -nu·- *to be inside* V^{s0}) V^{s0}, -camaaknu·má·- *to be plentiful underground lying down* (-cama- V^{s0} + -áknu·- V^{s0} + -má·- V^{s0}).

V^{a0} complex stems. The simplest combination is prefix or suffix + V^{s0} or V^{a0} (roots) and the most complex observed is V^{a0} + V^{a0} + V^{a0}. E.g. -tanu·- *to enter* V^{a0} (ta- ingressive + -nu·- *to be inside* V^{s0}), -ákkácan- *to have a headache* V^{a0} (ák- *head* + -kácan- *to hurt* V^{a0}), -qusnan- *to run* V^{a0} (-qus- *to fly* V^{a0} + -nan *specific action*), -tacamata·knu·tamá·- *to become plentiful underground lying down* V^{a0} (-tacama- *to become plentiful* V^{a0} + -ta·knu·- *to get underground* V^{a0} + -tama- *to lie down* V^{a0}).

1.4.2. Constituency of monotransitive (V^{s1}, V^{a1}) stems.

The only monotransitive roots are V^{a1}. E.g. -i·- *to buy IT*, -čáš- *to lift IT*, -ška- *to bite IT*, -nik- *to hit IT*, -čán- *to plant IT*, -puca- *to look for IT*, -tiya- *to get IT*, -tama·-wa- *to buy IT*.

V^{s1} and V^{a1} complex stems. The simplest combination that forms complex V^{s1} stems is affix + V^{s0} (root), and the most complex observed is affix + (V^{s0} + V^{s0} + V^{s0}). E.g. -li·cama- *to be full of IT* V^{s1} (li·- instrumental + -cama- *to be plentiful* V^{s0}), -pu·-camaáknu·má·- *to be plentiful underground lying down in IT* V^{s1} (pu·- *inside of* + -camaaknu·ma·- V^{s0}). The simplest combination of complex V^{a1} stems is affix + V^{a0} (root) and the most complex observed is V^{a1} + V^{a1} + V^{a1} + V^{a0}. E.g. -tá·án- *to go with HIM* V^{a1} (tá·- accompanying + -án- to go V^{a0}), -sakwáki·tanu·- *to be inside picking and eating IT up from the ground* V^{a1} (-sak- *to recover IT* V^{a1} + -wá- *to eat IT* V^{a1} + -ki·- *to put IT away* V^{a1} + -tanu·- *to enter* V^{a0}).

1.4.3. Constituency of multitransitive stems (V^{a2}, V^{a2}, V^{a3}, V^{a3}, etc.). All multitransitive stems are complex. The simplest combination is affix + V^{s0} or V^{a0} (roots) and the most complex is affix + (V^{a1} + V^{a1} + V^{a1} + V^{a0}). E.g. -skini- *to ask HIM for it* V^{a2} (-skin- *to ask for IT* V^{a1} + -ni which marks an indirect object), -maqasa-kwáki·tanu·- *to enter and make IT pick it up from the ground and eat it* V^{a2} (maqa- causative + -sakwáki·- V^{a1} + -tanu·- V^{a0}).

2.0. Outer layer formations. The outer layer affixes appear in a fixed relative order without flexibility as regards immediate constituents. There are eleven relative positions of suffixes (**2.1**) and seven positions of prefixes (**2.2**).

2.1. Suffixes. Suffixes belong to eleven decade classes 10–110 on the basis of their positions relative to the stem. Members of each decade class are mutually exclusive. The relative positions after the verb stem are shown in the following chart with each suffix listed by number and its basic morpheme alternant.

Members of decade classes 10–70 may immediately follow the stem or a suffix of a preceding decade class. A member of class 70 is always present. Members of decade classes 80–110 may immediately follow a class 70 suffix, or a suffix of a class between 70 and the given suffix.

In the listing of suffixes with their alternants, it would be possible to define a large number of the alternants in terms of their phonological environment; however, due to the number of irregularities the alternations are listed in terms of morphological environment for the most part. Intervening

10	20	30	40	50	60	70	80	90	100	110
-ti·ła	-půtun	-pala	-qů·	-qa·	-kan	-ya·	-ca·	-wi	-ní	-ti
11	21	31	41	51	61	71	81	91	101	111
	-m'·		-qů·		-kan	-ni·tan	-ci			-tit
	22		42		62	72	82			112
	-wíla					-łi				
	23					73				
	-ya·									
	24									
	-wåkå									
	25									

zero alternants which do not interfere with the description of another morpheme are not mentioned in its description; they are, however, included in the specific formulas of all examples in which they occur. For convenience in identifying them, zero alternants are given in the lists and formulas with their index number in italics. The terms 'phonemically word medial' and 'phonemically word final' are employed in the description to mean 'followed by an overt or non-zero alternant' and 'not followed by an overt alternant' respectively.

2.1.1. Class 10 is comprised by suffix 11 -ti·ła *ambulative.* čipati·łay *he goes along holding it* (-čipa- *to hold IT* V^{a1} + 11 + 71.2), tásati·łapůtun *he wants to go along crying* (-tása- *to cry* V^{a0} + 11 + 21.1 + *71.2*).

2.1.2. Class 20 is comprised by suffixes 21–25 (22–25 mark position of the actor; 21 marks a different type of meaning.)

Suffix 21 marks desiderative. Its alternants are:

21.1 -půtun directly precedes suffix 41, 42, 51, 61, 62, 71, 81.1, 82, and 112. cukupůtunqů·ł *they wanted to begin* (-cuku- *to begin* V^{a0} + 21.1 + 41.1 + 73.2); cukupůtunkan *someone wants to begin* (V^{a0} + 21.1 + 61.1 + *71.2*); cukupůtun *he begins* (V^{a0} + 21.1 + *71.2*); cukupůtunca *he wanted to begin going there* (V^{a0} + 21.1 + *73.4* + 81.2); cukupůtunci *he wanted to begin coming here* (V^{a0} + 21.1 + *73.4* + 82.1); cukupůtuntit *you* (pl.) *wanted to begin* (V^{a0} + 21.1 + *73.4* + 112).

21.2 -půtum directly precedes suffixes 31 and 81.1B[5] (i.e. suffixes beginning with p). cukupůtumpalay *he wants to begin* (V^{a0} + 21.2 + 31.1 + 71.2); cukupůtumpi *you (sing) wanted to begin* (V^{a0} + 21.2 + 73.4 + 81.1B).

21.3 -půtu directly precedes suffixes 73.2, 91.2, 101.2, *111.3.* cukupůtuł *he wanted to begin* (V^{a0} + 21.3 + 73.2); cukupůtu *you* (sing) *wanted to begin* (V^{a0} + 21.3 + *73.4* + *111.3*); nikpůtun *he wanted to hit you* (sing) (-nik- *to hit HIM* V^{a1} + 21.3 + *73.4* + 101.2).

Suffixes 22–25 are basically a unique class of four static verb stems with a suffixial usage. They are: -má·- (-suffix 22) *to be in a lying down or permanent position,* -wíla (=suffix 23) *to be in a sitting or stationary position,* -ya·- (=suffix 24) *to be in a standing or mobile position,* -wåkå- (=suffix 25) *to be up above or in space.* When any of these forms appear as a suffix, a static verb stem or part of a static verb stem, they are unique in that they are always accompanied by suffix 73. Suffix 73 marks factual, plus a transiently implicit meaning of past tense (see below under this suffix). But se-

[5] Certain verb roots and affixes (usually those containing sequences of voiced continuant plus vowel) have special alternants occurring when a 110 suffix is present. These are hereinafter called 'B-alternants', and in numbered morphemes are symbolized by the letter B following the decimal number of the alternant (cf. **2.1.12**).

quences consisting of one of suffixes 22–25 plus suffix 73 mark the factual of 73 plus the basic meaning of 22–25 plus a transiently implicit meaning of present tense. We set up this transient present tense meaning as associated with suffixes 22–25, and say that it displaces the transient past tense meaning of suffix 73 when the sequence occurs. The transient character of the present tense implicit in suffixes 22–25 is seen when the sequence (22–25) with 73 occurs with 271 (past); such a sequence then marks the factual of 73 plus the basic meaning of 22–25 plus the past tense of 271, with the implicit tense meanings replaced by the basic tense meaning of 271. máh *he is lying down* (-má·- is suffix 22 as V^{s0}, and marks implicit present tense; -h is 73.3 and marks factual, with its implicit past tense meaning displaced); šmáh *he was lying down* (271.1 + V^{s0} + 73.3); camamáh *they are plentiful lying down* (-camamá·- is a compound V^{s0} stem consisting of -cama- *to be plentiful* [V^{s0}] + -má·- [suffix 22 as V^{s0}]; the compound stem marks implicit present tense; -h is 73.3 as in the preceding example). cukumáh *it is beginning* (-cuku- *to begin* is V^{a0}; -má· is suffix 22 and marks process plus implicit present tense; -h is 73.3 as in the preceding examples). (Note that the 22–25 morpheme is structured as a suffix after active verb stems as here, but as a member of a compound stem after static verb stems as in -camamá·- above. The reasons for this have to do largely with the patterns in stem formation, and lie outside the scope of this paper.)

The alternants as described below are the same for these forms whether they appear in static stems or as suffixes.

Suffix 22 -má· marks process positionally undifferentiated (note that when 22 appears as V^{s0}, it marks a lying down position). It is implicitly present tense as noted above. Its alternants are:

22.1 -má· ~ (-má (-má· preceding any suffix other than 73.3 and -má directly preceding 73.3). cukumá·w *we* (incl.) *are beginning* (V^{a0} + 22.1 + *73.4* + 91.2), cukumá·pah *he is beginning again* (V^{a0} + 22.1 + 31.2 + 73.3), cukumá·qû·ł *they are beginning* (V^{a0} + 22.1 + 41 + 73.2), cukumáh *he is beginning* (V^{a0} + 22.1 + 73.3).

22.1B (cf. **2.1.12**) -pá· occurs when the sequence contains a 110 suffix. cukupá·t *you* (sing.) *are beginning* (V^{a0} + 21.1B + *73.4* + 111.2), cukupá·palátit *you* (pl.) *are beginning again* (V^{a0} + 21.1B + 31.1B + *73.4* + 112).

Suffix 23 marks process with the actor in a sitting or fixed position; it is implicitly present tense as noted above. Its alternants are:

23.1 -wila ~ -wi (-wila preceding any suffix other than 73.3 and -wi directly preceding suffix 73.3). cukuwilakah *someone is sitting down beginning* (V^{a0} + 23.1 + 61.2 + 73.3), cukuwih *he is sitting down beginning* (V^{a0} + 23.1 + 73.3).

23.1B -wilá occurs when the sequence contains a 110 suffix. cukuwilá *you* (sing.) *are sitting down beginning* (V^{a0} + 31.1B + *73.4* + *111.3*).

Suffix 24 marks process with the actor in a standing or mobile position; it is implicitly present tense as noted above. Its alternants are:

24.1 -ya· ~ -ya (-ya· preceding any suffix other than 73.3 and -ya directly preceding suffix 73.3). cukuya·pah *he is standing beginning again* (V^{a0} + 24.1 + 31.2 + 73.3), cukuyah *he is standing beginning* (V^{a0} + 24.1 + 73.3).

Suffix 25 -wáká marks process with the actor up above or in space; it is implicitly present tense as noted above. cukuwákáh *he is up above beginning* (V^{a0} + 25 + 73.3), cukuwákáqû·ł *they are up above beginning* (V^{a0} + 25 + 41.1 + 73.2).

2.1.3. Class 30 is comprised of suffix 31 which marks repetitive. Its alternants are:

31.1 -pala ~ -pa; -pa preceding the suffix

73.3 and -pala in all other instances. wápah *he ate it again* (V^{a1} + 31.1 + 73.3); wápalay *he eats it again* (V^{a1} + 31.1 + 71.2).

31.1B -palá occurs when the sequence contains a 110 suffix. wápalátit *you* (pl.) *ate it again* (V^{a1} + 31.1B + 73.4 + 112).

2.1.4. Class 40 is comprised by the homophonous suffixes 41 and 42.

Suffix 41 may occur with any verb stem unless both a non-third person subject and object are present. It marks plural of the 3rd person subject and/or object, replacing the singular meaning or meanings implicit in the verb stem. Its alternants are:

41.1 -qù· occurs in all positions except those occupied by 41.2. paši·qù·y *he bathes them, they bathe him,* or *they bathe them* (-pasi·- *to bathe IT* V^{a1} + 41.2 + 71.2).

41.2 -qù occurs directly preceding 73.3 and *111.3*. cukumà·qùh *they are beginning* (V^{a0} + 22.1 + 41.2 + 73.3), paši·qù *you* (sing.) *bathed them* (V^{a1} + 41.2 + *73.4* + *111.3*).

Suffix 42 occurs without restrictions as to person. It marks terminative. Its alternants are 42.1 -qù· and 42.2 -qù which occur in the same positions as the corresponding alternants of its homophonous suffix 41. wà·yanqù·w *we* (incl.) *finished eating* (-wà·yan- to eat V^{a0} + 42.1 + *73.4* + 91.2), wà·yamà·qùh *he is finishing eating* (V^{a0} + 22.1 + 42.2 + 73.3).

In a sequence whose meaning includes both plural of third person subject and/or object, and terminative, only one of the homophonous forms of the class 40 suffixes occurs; we describe such a sequence as containing both suffixes 41 and 42 fused in the one suffixial form. wà·yanqù·ł *they finished eating* (V^{a0} + 41.1 · 42.1 + 73.2).[6]

2.1.5. Class 50 is comprised by suffix 51 suffix 51 which marks preferential (in which the doing of the action of the verb takes priority over something else). Its alternants are:

51.1 -qà· occurs in all positions except those occupied by 51.2 or 51.3. wilaqà·w *in the meanwhile we* (incl.) *are sitting* (V^{s0} + 51.1 + 73.4 + 91.2), kawà·yanqù·qà·ł *let him finish eating first* (273 + V^{a0} + 42.1 + 51.1 + 73.2).

51.2 -qà occurs directly preceding 73.3 or any of the alternants of 71. wilaqàh *in the meanwhile he is sitting* (V^{s0} + 51.2 + 73.3), nacukuqàya·w *in the meanwhile we* (incl.) *will begin* (272 + V^{a0} + 51.2 + 71.1 + 91.2).

51.3 -qàyà· ~ -qàyà (-qàyà· appears when phonemically word medial, -qàyà when phonemically word final; this alternation is homophonous with that of the B-alternants of 71.1 and 71.2 below). Alternant 51.3 occurs before suffix 73 when a 110 suffix appears in the sequence (the alternant of 73 when a 110 suffix is present is always *73.4* zero). wilaqàyà·tit *in the meanwhile you* (pl.) *are sitting* (V^{s0} + 51.3 + *73.4* + 112), wilaqàyà *in the meanwhile you* (sg.) *are sitting* (V^{s0} + 51.3 + *73.4* + *111.3*).[7]

2.1.6. Class 60 is comprised by the homophonous suffixes 61 and 62.

Suffix 61 marks unidentified character of the third person subject, replacing the identified meaning implicit in the verb stem. It may follow either transitive or in-

[6] The sign (·) is used in formulas to denote fusion of the type seen with suffixes 41 and 42, and with 61 and 62 (see below).

[7] A different and perhaps equally valid description to account for the forms set up as 51.3 would be to set up for suffix 73 an alternant 73.5 -yà· ~ -yà (with the sub-alternants paralleling the alternation of 71.1B and 71.2B and homophonous with them), and to state that 73.5 occurs when preceded by 51 if a 110 suffix is present in the sequence. The chief disadvantage of this description is that it would create a unique type of sequence in which an overt alternant of suffix 73 precedes a suffix of a succeeding decade-class; this is contrary to the pattern as we have described it under *73.4* below.

transitive stems. Its alternants are:

61.1 -kan occurs preceding the suffixes 71, 81 and 82. paši·kan *someone bathes him* (V^{a1} + 61.1 + *71.2*), paši·kana·čá *someone bathes him going there* (V^{a1} + 61.1 + 71.1 + 81.2), paši·kančá *someone bathed him going there* (V^{a1} + 61.1 + *73.4* + 81.2), paši·kanči *someone bathed him coming here* (V^{a1} + 61.1 + *73.4* + 82.1).

61.1B -kán ~ -kám occurs when the sequence contains a 110 suffix (-kán directly precedes 71, 82 or 122; -kám directly precedes 81). paši·kaná *someone bathes you* (sing.) (V^{a1} + 61.1B + 71.2B + *101.3* + *111.3*), paši·kančitá *someone bathed you* (sing.) *coming here* (V^{a1} + 61.1B + *73.4* + 82.1B + *101.3* + *111.3*), ka·paši·kántit *someone bathed you* (pl.) (231 + V^{a1} + 61.1B + *73.4* + *101.3* + 112).

61.2 -ka directly precedes 72, 73.3, and 101. paši·kanit *someone has bathed him* (V^{a1} + 61.2 + 72.2), paši·kah *someone bathed him* (V^{a1} + 61.2 + 73.3), kinka·paši·kan *someone bathed us* (251.1 + 231 + V^{a1} + 61.2 + *73.4* + 91.2).

61.2B -ká directly precedes the sequence *73.4* with *111.3*. paši·ká *someone bathed you* (sing.) (V^{a1} + 61.2B + *73.4* + *111.3*).

Suffix 62 marks reflexive object, replacing the third person object implicit in the verb stem. It follows only transitive stems. Its alternants are: 62.1 -kan, 62.1B -kán ~ -kám, 62.2 -ka, and 62.2B -ká which occur in the same positions as the corresponding alternants of 61. Examples with suffix 62 are homophonous with those shown above for suffix 61 with transitive stems but differ as to formula: paši·kan *he bathes himself* (V^{a1} + 62.1 + *71.2*), paši·káná *you* (sing.) *bathe yourself* (V^{a1} + 62.1B + 71.2B + *101.3* + *111.3*), paši·kah *he bathed himself* (V^{a1} + 62.2 + 73.3).

In a sequence whose meaning includes both unidentified subject and reflexive object, only one of the homophonous forms of the class 60 suffixes occurs; we describe such a sequence as containing both suffixes 61 and 62 fused in the one suffixial form. paši·kan *someone bathed himself* (V^{a1} + 61.1 · 62.1 + 71.2).[8]

2.1.7. Class 70 is comprised by suffixes 71, 72 and 73, which mark aspect. This is the only obligatory class; one of these affixes is present in every verb sequence.

Suffix 71 marks habitual or ordinary action; the tense is implicitly present unless otherwise marked by prefix 271 (past) or 272 (future). cukuy *he begins* (V^{a0} + 71.2), ščukuy *he began* (271.1 + V^{a0} + 71.2), nacukuy *he will begin* (272 + V^{a0} + 71.2). Its alternants are:

71.1 -ya· ~ -a· occurs in phonemically word medial position (-ya· after vowels and -a· after consonants). paši·ya·n *he bathes you* (sing.) (V^{a1} + 71.1 + 101.2), nika·n *he hits you* (sing.) (V^{a1} + 71.1 + 101.2). These alternants also occur word final when they are followed by that zero alternant of 91.2 which varies freely with -w. cukuya·w ~ cukuya· *we* (incl.) *begin* (V^{a0} + 71.1 + 91.2) ~ (V^{a0} + 71.1 + *91.2*), haša·w ~ haša· *we* (incl.) *rest* (-haš- *to rest* V^{a0} + 71.1 + 91.2) ~ (V^{a0} + 71.1 + *91.2*).

71.1B -yá· ~ -á· occurs in phonemically word medial position when the sequence contains a 110 suffix (-yá· following vowels and -á· following consonants). cukuyá·tit *you* (pl.) *begin* (V^{a0} + 71.1B + 112), haša·-tit *you* (pl.) *rest* (Va^{0} + 71.1B + 112).

71.2 (-y ~ [-h ~ zero]) ~ (-a ~ zero) occurs in phonemically word final position. -y occurs after a vowel, varying freely with -h after a short vowel and with zero after a long vowel. (The zero sub-alternant is given in formulas as *71.2*). cukuy ~ cukuh *he begins* (V^{a0} + 71.2), cápáy ~ cápáh *he sews it* (-cápá- *to sew IT* V^{a1} + 71.2), cánqa·y ~ cánqa· *it is lacking* (-cánqa·- *to be lacking* V^{a0} + 71.2 or *71.2*), čáqá·y ~ čáqá· *he washes it* (-čáqá·- *to wash IT* V^{a1} + 71.2 or *71.2*). -a occurs after any consonant except n and zero occurs after n.

[8] See footnote 6.

haša *he rests* (V^{a0} + 71.2), min *he comes* (-min- *to come* V^{a0} + *71.2*).

71.2B -yá ~ -á occurs in phonemically word final position directly preceding suffix *111.3* (-yá follows a vowel and -á follows a consonant). cukuyá *you* (sing.) *begin* (V^{a0} + 71.2B + *111.3*), hašá *you* (sing.) *hit him* (V^{a0} + 71.2B + *111.3*).

Suffix 72 marks perfect aspect; the tense is implicitly present unless otherwise marked by prefix 271 (past). cukuni·t *he has begun* (V^{a0} + 72.2), škukuni·t *he had begun* (271.1 + V^{a0} + 72.2). Its alternants are:

72.1 -ni·tan ~ -ni·ta occurs in phonemically word medial position (-ni·tan directly precedes 81.1, 81.2 and 82.1; -ni·ta directly precedes 91.2 and 101.2). cukuni·tančá *he has begun going there* (V^{a0} + 72.1 + 81.2), cukuni·tanči *he has begun coming here* (V^{a0} + 72.1 + 82.1), cukuni·taw *we* (incl.) *have begun* (V^{a0} + 72.1 + 91.2), paši·ni·tan *he has bathed you* (sing.) (V^{a1} + 72.1 + 101.2).

72.1B -ni·tán ~ -ni·tám occurs in phonemically word medial position when the sequence contains a 110 suffix (-ni·tán directly precedes 82.1B or 112 and -ni·tám directly precedes 81.1B). cukuni·tánčitá *you* (sing.) *have begun coming here* (V^{a0} + 72.1B + 82.1B + *111.3*), cukuni·tántit *you* (pl.) *have begun* (V^{a0} + 72.1B + 112), cukuni·támpi *you* (sing.) *have begun there* (V^{a0} + 72.1B + 81.1B + *111.3*).

72.2 -ni·t occurs in word final position. cukuni·t *he has begun* (V^{a0} + 72.2).

72.2B -ni·tá occurs in phonemically word final position directly preceding *111.3*. cukuni·tá *you* (sing.) *have begun* (V^{a0} + 72.2 + *111.3*).

Suffix 73 marks factual aspect; the tense is implicitly past unless otherwise marked by one of suffixes 22–25 (whose implicit meaning is present; see above under these suffixes), prefix 271 (the combination of 271 with 73 marks conditional), or prefix 273 (the combination of 273 with 73 marks imperative). cukuł *he began* (V^{a0} + 73.2), cukumah *he is beginning* (V^{a0} + 22.2 + 73.3), škukuł *he would begin* (271.1 + V^{a0} + 73.2), kacukuł *that he begin, let him begin* (273 + V^{a0} + 73.2). Its alternants are:

73.1 -li occurs after consonants. hašli *he rested* (V^{a0} + 73.1), sputli *he finished* (-sput- *to finish* V^{a0} + 73.1).

73.2 -ł occurs after vowels. cukuł *he began* (V^{a0} + 73.2), cápáł *he sewed it* (V^{a1} + 73.2).

73.3 -h occurs directly following one of 22–25 (either in their suffixial usage or static verb stem usage), 31, 61 and the verb stems -wan- *to become* V^{a0} and -wan- *to say IT* V^{a1}. Examples: máh *he is lying down* (22 as V^{s0} + 73.3), hašmáh *he is resting* (V^{a0} + 22.2 + 73.3), hašpah *he rested again* (V^{a0} + 31.2 + 73.3), haškah *someone rested* (V^{a0} + 61.2 + 73.3), wah *he said it* (-wan V^{a1} + 73.3), wah *he became* (-wan- V^{a0} + 73.3). When 73 directly precedes the suffixes 41, 42 or 51 and the sequence also contains one of the suffixes 22–25 or these forms as static verb stems, 73 varies freely between 73.2 and 73.3. má·qú·ł ~ má·qúh *they are lying down* (22 as V^{s0} + 41.1 + 73.2 or 22 as V^{s0} + 41.2 + 73.3), wá·yamá·qú·ł ~ wá·yamá·qúh *he is finishing eating* (V^{a0} + 42.1 + 73.2 or V^{0a} + 42.2 + 73.3), wilaqá·ł ~ wilaqáh *he is sitting in the meanwhile* (23 as V^{s0} + 51.1 + 73.2 or 23 as V^{s0} + 51.2 + 73.3).

73.4 -zero precedes 81, 82, 91, 101, 111 and 112 (i.e. any suffix of a succeeding decade class). cukučá *he began going there* (V^{a0} + *73.4* + 81.1), cukuči *he began coming here* (V^{a0} + 73.4 + 82.1), cukuw *we* (incl.) *began* (V^{a0} + *73.4* + 91.2), paši·n *he bathed you* (sing.) (V^{a1} + *73.4* + 101.2), hašti *you* (sing.) *rested* (V^{a0} + *73.4* + 111.1), cuku) *you* (sing.) *began* (V^{a0} + *73.4* + *111.3*), cukutit *you* (pl.) *began* (V^{a0} + *73.4* + 112).

2.1.8. Class 80 is comprised by the suffixes 81 and 82, which mark direction.

Suffix 81 marks ablative (i.e. direction away from). Its alternants are:

81.1 -ča· ~ -čá (ča· in word medial and -čá in word final position). cukuya·ča·w

we (incl.) *begin going there* (V^{a0} + 71.1 + 81.1 + 91.2), cukuya·cá *he begins going there* (V^{a0} + 71.1 + 81.1).

81.1B -pi occurs when the sequence contains a 110 suffix. cukuyá·pi *you* (sing.) *begin going there* (V^{a0} + 71.1B + 81.1B + *111.3*), cukuyá·pitit *you* (pl.) *look for it going there* (V^{a0} + 71.1B + 81.1B + 112).

Suffix 82 marks adlative (i.e. direction toward). Its alternants are:

82.1 -či occuring in both word medial and word final positions. cukuya·či *he begins coming here* (V^{a0} + 71.1 + 82.1), cukuya·čiw *we* (incl.) *begin coming here* (V^{a0} + 71.1 + 82.1 + 91.2).

82.1B -čitán ~ čitá occurs when the sequence contains a 110 suffix (-čitán occurs with 112 and -čitá with *111.3*). cukuyá·čitántit *you* (pl.) *begin coming here* (V^{a0} + 71.1 + 82.1B + 112), cukuyá·čitá *you* (sing.) *begin coming here* (V^{a0} + 71.1 + 82.1B + *111.3*).

The suffixes 81 and 82 are basically two complex active verb stems with a suffixial usage. The stems and corresponding suffixes are here shown; či- ~ č- is a prefix meaning *to arrive* which appears only in these stems and their corresponding suffixes. Suffix 81 is identified with (či- ~ č-) + (-án- ~ -pin- [B] *to go*) > -ča·n- ~ -čipin- [B] *to arrive going* (V^{a0}). Suffix 82 is identified with (či- ~ č-) + (-min- ~ -tán- [B] *to come*) -čin- ~ -čitán- [B] *to arrive coming* (V^{a0}). Note that these equations involve certain morphophonemic irregularities which are not elaborated here.[9]

2.1.9. Class 90 is comprised of suffix 91 which marks first person plural subject; it is implicitly inclusive unless marked as exclusive by prefix 261. cukuya·w *we* (incl.) *begin* (V^{a0} + 71.1 + 91.2) (inclusive is implicit in suffix 91); kcukuya·w *we* (excl.) *begin* (261 + V^{a0} + 71.1 + 91.2) (exclusive is marked by 261). For further discussion of the interaction of prefix 261 with suffix 91, see under 261 in section **2.2.6**.

The alternants of suffix 91 are:

91.1 -wi following a consonant. hašwi *we* (incl.) *rested* (V^{a0} + *73.4* + 91.1), nikwi *we* (incl.) *hit him* (V^{a1} + *73.4* + 91.1).

91.2 -w (~ zero) following a vowel. ya·w *we* (incl.) *are standing* (24 as V^{s0} + *73.4* + 91.2), cukuw *we* (incl.) *began* (V^{a0} + *73.4* + 91.2). Following suffix 71, 91.2 -w alternates freely with *91.2* zero. cukuya·w ~ cukuya· *we* (incl.) *begin* (V^{a0} + 71.1 + 91.2 or *91.2*).

91.3 -zero preceding 101. kka·paši·ya·n *we bathed you* (pl.) (261 + 241 + V^{a1} + 71.1 + *91.3* + 101.2).

2.1.10. Class 100 is comprised of the suffix 101 which marks second person object; the number is implicitly singular unless marked for plural by prefix 241. paši·ya·n *he bathes you* (sing.) (V^{a1} + 71.1 + 101.2) (singular is implicit in 101); ka·paši·ya·n *he bathes you* (pl.) (241 + V^{a1} + 71.1 + 101.2) (plural is marked by 241). The alternants of 101 are:

101.1 -ni following a consonant. nikni *he hit you* (sing.) (V^{a1} + *73.4* + 101.1).

101.2 -n following a vowel. paši·ya·n *he bathes you* (sing.) (V^{a1} + 71.1 + 101.2).

101.3 -zero preceding 111 or 112. paši·kánà *you* (sing.) *bathe yourself* (V^{a1} + 62.1B + 71.2B + *101.3* + *111.3*), kinka·paši·tit *you* (pl.) *bathe us* (262.1 + 241 + V^{a1} + *73.4* + *101.3* + 112).

2.1.11. Class 110 is comprised of the suffixes 111 and 112; both of these mark second person subject, but differ as to number.

Suffix 111 marks second person singular subject. Its alternants are:

111.1 -ti following a consonant. skuhti *you* (sing.) *worked* (-skuh- *to work* V^{a0} + *73.4* + 111.1), čánti *you* (sing.) *planted it* (-čán- *to plant IT* V^{a1} + 73.4 + 111.1).

111.2 -t following a vowel-final monosyllabic form, a vowel-final bisyllabic form

[9] For a different structuring of the stems *to go* and *to come* see footnote 11.

whose first morpheme is 273 (ka-) and following the suffixes 22 and 24 or their homophonous forms -må·- and -ya·- in their static verb stem usage. wát *you* (sing.) *ate it* (-wå- *to eat IT* V^{a1} + *73.4* + 111.2), kawát *eat it* (*you* sing.) (263 + V^{a1} + *73.4* + 111.2), cukupá·t *you* (sing.) *are beginning* (V^{a0} + 22.1B + *73.4* + 111.2), cukuyá·t *you* (sing.) *are beginning standing* (V^{a0} + 24.1B + *73.4* + 111.2).

111.3 -zero following a vowel in all instances not mentioned above. tiwá *you* (sing.) *ate it* (251 + V^{a1} + *73.4* + *111.3*), cuku *you* (sing.) *began* (V^{a0} + *73.4* + *111.3*), cukuyá *you* (sing.) begin (V^{a0} + 71.2B + *111.3*), cukupá·pi *you* (sing.) *are beginning* (V^{a0} + 22.1B + 81.1B + *111.3*).

Suffix 112 marks second person plural subject. Its only alternant is -tit. cukuyá·tit *you* (pl.) *begin* (V^{a0} + 71.1B + 112).

2.1.12. Note that suffixes of class 110 are accompanied by a special alternant (B-alternant) of most verb roots and affixes.[10] The general rule for the formation of the B-alternant from the basic alternant of root or affix is that every basically non-laryngealized vowel preceded by a voiced continuant is laryngealized when the sequence contains a 110 suffix. E.g. the laryngealized vowels in the word li·smání·nánå·tit *you* (pl.) *accustom yourself to things* (-li·smani·nan- V^{a0} + 71.1B + 112) are basically non-laryngealized when they do not appear with 111 or 112. li·smani·nana·w *we* (incl.) *accustom ourselves to things* (V^{a0} + 71.1 + 91.2).

An exception to this rule is prefix 272 (na-), in which the vowel is not laryngealized when it appears with a 110 prefix. nali·smání·nánå *you* (sing.) *will accustom yourself to things* (272 + V^{a0} + 71.2B + *111.3*).

In most bisyllabic verb roots and affixes whose second vowel is preceded by a voiced continuant both vowels are laryngealized even though the first vowel is not preceded by a voiced continuant. λáwápá·t *you* (sing.) *are doing it* (-λawa- V^{a1} + 22.1B + *73.4* + 111.2), kasiwi *twist it* (*you* sing.) (273 + -siwi- V^{a1} + *73.4* + *111.3*), ká·náhlåyá *you* (sing.) *believe it* (-ka·nahla- V^{a1} + 71.2B + *111.3*) (the V^{a1} stem is from ka·nah- *truly* + -la- *to do* [V^{a0}]), spúlání·tá *you* (sing.) *have crumbled it* (-spula- V^{a1} + 72.2B + *111.3*).

Although this is predominantly the pattern, there are a number of bisyllabic basic verb stems for which this phenomenon does not hold. tiyáyá·tit *you* (pl.) *fetch it* (-tiya- V^{a1} + 71.1B + 112), štiniyá *you* (sing.) *shiver* (-štini- V^{a0} + 71.1B + *111.3*).

The vowel in a number of monosyllabic verb roots is laryngealized even when not preceded by a voiced continuant. čúhá *you* (sing.) *spit* (-čuh- V^{a0} + 71.2B + 111.3), sú·t *you skinned it* (-su·- V^{a1} + 73.4 +

[10] Eugene A. Nida (Morphology: The Descriptive Analysis of Words, 2nd ed., Ann Arbor, 1949, p. 63) treats the feature of laryngealization present in Totonac second person as a morpheme. He does this on the basis of pairs such as paša *he bathes* and påšå *you* (sing.) *bathe*, in which the laryngealization is the only overt marker of 2nd person. Our present analysis treats paša as V^{a0} + 71.2 and påšå as V^{a0} + 71.2B + *111.3*, with the morphemic difference consisting solely in the presence of the zero alternant of 111 in the second form. We grant the validity and importance of the general principle that an overt difference is morphemic if it is ever the only formal marker of a meaningful contrast; but for Totonac we consider that there are conflicting criteria which make it simpler to consider the laryngealized forms as morpheme alternants. Our chief reasons for this are (1) the fact that the occurrence of the zero alternant *111.3* is phonologically defineable, and (2) the extremely complex description which would be required for the laryngealization as a morpheme, since it (complex as it is in itself) would be only one of a series of alternants including the change m > p and the irregular changes and lack of change mentioned throughout **2.1.12.** Moreover, the occurrence of laryngealization as the only overt second person marker, although fairly frequent by repetition in a given quantity of text, is possible only in a very limited number of sequence types; most of the sequence types that have laryngealization include overt suffix 112 or an overt alternant of 111.

111.2). Here again there are exceptions. hašá *you* (sing.) *rest* (-haš- V^{a0} + 71.2B + *111.3*), staktit *you* (pl.) *grew* (-stak- V^{a0} + *73.4* + 112.

There is also a smaller group of verb roots and affixes where different vowels are laryngealized with class 110 prefixes that do not fall in the above categories. úksíłá *you* (sing.) *see it* (-úksił- V^{a1} + 71.2B + *111.3*), cánqá·yá *you* (sing.) *are missing* (-cánqa·- V^{a0} + 71.2B + *111.3*), kústu *you* (sing.) *cultivated* (-kustu- V^{a0} + *73.4* + *111.3*), paši·káná *you* (sing.) *bathe yourself* (V^{a1} + 61.1B (-kan) + 71.2B + 101.3 + *111.3*), cukuni·tántit *you* (pl.) *have begun* (V^{a0} + 72.1B (-ni·tan) + 112). However, the majority of suffixes and verb roots with basically non-laryngealized vowels preceded by a voiceless consonant have zero change with class 110 prefixes.

A few roots form their B-alternants from the basic alternant by the change of m to p (with the additional laryngealization in the one stem which has a non-laryngealized vowel preceded by a voiced continuant). The following three roots fall into this group:

-qašmat- ~ -qašpát- [B] *to hear IT* (V^{a1}). qašmata *he hears it* (V^{a1} + 71.2); qašpátá *you* (sing.) *hear it* (V^{a1} + 71.2B + *111.3*).

-tumí·- ~ -tupí·- [B] *to be one* (dependent V^{s} root occurring in certain V^{a} stems). tati·tumí·y *they form into one continuous line* (-tati·tumí·- V^{a0} + 71.2), tati·tupí·-yá·tit *you* (pl.) *form into one continuous line* (-tati·tupí·- [B] V^{a0} + 71.1B + 112).

-má·- ~ -pá·- [B] *to be in a lying position* (V^{s0}); this root also occurs suffixially as morpheme 22. má·w *we* (incl.) *are lying down* (V^{s0} + *73.4* + 91.2); pá·t *you* (sing.) *are lying down* (V^{s0} + *73.4* + 111.2), ma·mí·y *he lays it down* (-ma·mí·- V^{a1} [derivative of -má·-] + 71.2), má·pí·yá *you* (sing.) *lay it down* (-má·pí·- [B] V^{a1} + 71.2B + *111.3*).

The roots -án- ~ -pin- [B] *to go* (V^{a0}) and -min- ~ -tán- [B] *to come* (V^{a0}) show an irregular change in the formation of their B-alternants. án *he goes* (V^{a0} + *71.2*) : piná *you* (sing.) *go* (V^{a0} + 71.2B + *111.3*); min *he comes* (V^{a0} + *71.2*) : táná *you* (sing.) *come* (V^{a0} + 71.2B + *111.3*). The similarity between the basic alternant -min- *to come* and the B-alternant -pin- *to go*, and the corresponding similarity between the basic alternant -án- *to go* and the B-alternant -tán- *to come* appear too striking to be considered fortuitous. An attractive historical explanation is to consider the earlier forms as *-min- ~ -pin- and *-án- ~ -tán- with subsequent interchange of meaning correlated with the second person.[11]

Suffixes 81 -ča· and 82 -či show the same type of change in their B-alternants as the stems -án- and -min- as they are related to these verb stems. The B-alternants of 81 and 82 are described under **2.1.8.**

2.2. Prefixes. The outer layer prefixes belong to seven decade classes 210 to 270 on the basis of their positions relative to the stem. Members of each decade class are

[11] An alternative treatment of the roots *to go* and *to come* is to set the roots up structurally as two morphemes -min- ~ -pin- [B] *to come, go* and -án- ~ -tán- [B] *to go, come*; the first meaning (alloseme) of each of these morphemes so structured is indicated when the subject is first or third person, and the second meaning (alloseme) is indicated when the subject is second person. The apparent interchange of allosemes is then attributed, not to a reversal of meaning, but to a translational incommensurability between the Totonac and English verbs: both of the Totonac verbs signify motion with respect to certain points of reference, which are apparently not the same as the reference points for English *to go* and *to come* and which may or may not shift with different person subjects. The semantic details seem to elude precise statement so far; however the following similar instance of Spanish-English nonequivalence is illustrative of the same type of problem: Spanish ir *to go* is translated *to come* in first person in cases like ahi voy *I'm coming* (e.g. spoken to a person who has called from a distance). Even between these two Indo-European languages there is thus an incommensurability arising from differences in the locative reference points for the verbs *to go* and *to come*.—WLW.

mutually exclusive. The relative positions before the verb stem are shown in the following chart (with each prefix listed by number and its normal morpheme alternant).

270	260	250	240	230	220	210
š- 271 na- 272 ka- 273	k- 261 kin- 262	ti- 251	ka·- 241	à·- 231	ákstu- 221	ki·- 211

Members of any decade class may immediately precede the verb stem or a prefix of a following decade class. The only prefixes whose alternants will be noted are 262 and 271. There is some vocalic assimilation and difference in fast and slow forms to be noted in most of the others but these follow regular morphophonemic operations and to avoid much repetition are not mentioned.

2.2.1. Class 210 is comprised of the prefix 211 ki·- which marks movement to a given point and return; the direction of the movement is implicitly ablative or away from the speaker (with return toward the speaker) unless marked by suffix 82 (adlative) as direction toward the speaker (with return away from the speaker). ki·paša *he goes and bathes and returns* (211 + -paš *to bathe* V^{a0} + 71.2) (direction away from speaker is implicit in 211); ki·paša·či *he comes and bathes and returns* (211 + V^{a0} + 71.1 + 82.1) (direction toward the speaker is marked by 82).

2.2.2. Class 220 is comprised of the prefix 221 ákstu- which marks independent subject. ákstucukuy *he begins by himself* (221 + V^{a0} + 71.2), ákstupaši·kan *he bathes himself* (emphatic) (221 + V^{a1} + 61.1 + *71.2*).

2.2.3. Class 230 is comprised of the prefix 231 à·- which marks *up to this time* and in this usage is found only in a negative sense. ni·à·cukuy *he has not begun yet* ([ni· = negative particle] + [231 + V^{a0} + 71.2]). It also marks anticipatory in combination with the inner layer prefix li·- instrumentative. à·li·cukuy *he begins in advance or anticipation of it* (231 + -li·cuku- *to begin for A* [3rd person] *REASON* V^{a1} + 71.2).

2.2.4. Class 240 is comprised of the prefix 241 ka·-, which always appears in sequence with suffix 101 (2nd person object); it marks plural, replacing the implicit singular meaning of 101. ka·paši·ya·n *he bathes you* (pl.) (241 + V^{a1} + 71.1 + 101.2), kka·paši·ya·n *I bathe you* (pl.) (261 + 241 + V^{a1} + 71.1 + 101.2), kka·paši·ya·n *we bathe you* (pl.) (261 + 241 + V^{a1} + 71.1 + *91.3* + 101.2). Prefix 241 has an irregular usage in that the sequence 241 with 101 may also mark 2nd person singular object when the subject of the verb is 1st person plural (261 with 91). kka·paši·ya·n *we bathe you* (sing.) (261 + 241 + V^{a1} + 71.1 + *91.3* + 101.2).

2.2.5. Class 250 is comprised of the prefix 251 ti- which marks intentionally remote when it occurs with 73 (past factual) or with the sequence 273 with 73 (imperative). ticukuł *he began* (251 + V^{a0} + 73.2), ni· katicukuł *don't let him ever begin* or *he will never begin* ([ni· = negative particle] + [273 + 251 + V^{a0} + 73.2]). When it occurs with suffix 71 or 72 it marks a continuance of action. ticukuy *he still begins* (251 + V^{a0} + 71.2), ticukuni·t *he has still begun again* (251 + V^{a0} + 72.2). It also occurs in a polite negative command with 71. ni· ticukuyá *do not begin* (*you* sing.) ([ni· = negative particle] + [251 + V^{a0} + 71.2B + *111.3*]).

2.2.6. Class 260 is comprised of the prefixes 261 and 262; these mark different types of first person. Prefix 261 k- marks

first person exclusive subject; the number is implicitly singular unless marked for plural by suffix 91. kcukuy *I begin* (261 + V^{a0} + 71.2), kcukuya·w *we* (excl.) *begin* (261 + V^{a0} + 71.1 + 91.2). Note that when 91 occurs without 261 (as shown under suffix 91 in **2.1.9**) it marks plural inclusive; when 261 occurs without 91, it marks singular exclusive; and that when the two occur in combination, 91 (plural) replaces the transient singular meaning of 261, while 261 (exclusive) simultaneously replaces the transient inclusive meaning of 91, so that the combination of 261 with 91 marks plural exclusive.

Prefix 262 kin- marks first person singular object. kimpaši·y *he bathes me* (262.1 + V^{a1} + 71.2). 262 may occur in combination with 241 and 101 (which together mark 2nd person plural object); the combined meanings in such a sequence add up to 1st person plural object. kinka·paši·ya·n *he bathes us* (262.1 + 241 + V^{a1} + 71.1 + 101.2). The alternants of 262 are:

262.1 kin- preceding all stops and affricates except p. kintiyay *he fetches me* (262.1 + -tiya- V^{a1} + 71.2); kinλahay *he beats me* (262.1 + -λaha- V^{a1} + 71.2); kinqanti·y *he follows my example* (262.1 + -qanti·- V^{a1} + 71.2).

262.2 kim- preceding the stop p. kimpaši·y *he bathes me* (262.2 + V^{a1} + 71.2).

262.3 ki- preceding a vowel or other continuant. kiúksiła *he sees me* (262.3 + -úksił- V^{a1} + 71.2); kisnáta *he hugs me* (262.3 + -snát- V^{a1} + 71.2); kiwaniy *he tells it to me* (262 + -wani- V^{a2} + 71.2).

2.2.7. Class 270 is comprised of the prefixes 271, 272, and 273.

Prefix 271 marks past tense. It always appears in sequence with 71, 72, 73, or with the sequence ([22–25] with 73). It replaces the present tense meaning implicit in 71, 72, or ([22–25] with 73) when it appears with them. šcukuy *he began* (271.1 + V^{a0} + 71.2), šcukuní·t *he had begun* (271.1 + V^{a0} + 72.2), šcukuł *he would begin* (271.1 + V^{a0} + 73.2), šcukumáh *he was beginning* (271.1 + V^{a0} + 22.1 + 73.3). Its alternants are:

271.1 š- preceding stops, affricates, voiced continuants, vowels and h. štiyay *he fetched it* (271.1 + V^{a1} + 71.2), ščípay *he grabbed it* (271.1 + -čipa- V^{a1} + 71.2), šwan *he said it* (271.1 + -wan- V^{a1} + *71.2*), šhaša *he rested* (271.1 + -haš- V^{a0} + 71.2), šán *he went* (271.1 + -án- V^{a0} + *71.2*).

271.2 k- preceding the phonemes s, ł, š. kłka·ka *he was hot* (271.2 + -łka·k- V^{a0} + 71.2), ksaka *he recovered it* (271.2 + -sak- V^{a1} + 71.2), kšapay *he erased it* (271.2 + -šapa- V^{a1} + 71.2).

271.3 ša- preceding prefix 261 (k-). šakcukuy *I began* (271.3 + 261 + -cuku- V^{a0} + 71.2), šakán *I went* (271.3 + 261 + -án- V^{a0} + *71.2*).

Prefix 272 na- always appears with suffix 71; it marks future tense, replacing the present tense implicit in 71. nacukuy *he will begin* (272 + -cuku- V^{a0} + 71.2).

Prefix 273 ka- always appears in sequence with suffix 73; the combination marks imperative (we use this as a cover term to include command, obligation, and certain other modal qualities). kacukuł *let him begin* or *that he begin* (273 + V^{a0} + 73.2), kakcukuł *on that I could begin* (273 + 261 + V^{a0} + 73.2), kacuku *begin* (*you* sing.) (273 + V^{a0} + *73.4* + *111.3*).

3. Paradigm of formulas for subject, object and tense formations.

Formulas for subject formations are 261 + V *1st pers. singular*; V + 91 *1st. pers. pl. inclusive*; 261 + V + 91 *1st. pers. pl. exclusive*; V [B] + 111 *2nd. singular*; V [B] + 112 *2nd. plural*; V *3rd. sing. identified*; V + 41 *3rd. pl. identified*; V + 61 *unidentified 3rd. singular*; V + 41 + 61 *unident. 3rd plural.*

Formulas for object formations are 262 + V *1st. singular*; 262 + 241 + V + 101 *1st. plural*; V + 101 *2nd. singular*; 241 + V + 101 *2nd. plural*; V *3rd. singular*; V + 41 *3rd. plural.*

Formulas for reflexive are 261 + V + 62 *1st. singular*; V + 62 + 91 *1st. pl. inclusive*; 261 + V + 62 + 91 *1st. pl. exclusive*; V [B] + 62 + 101 + 111 *2nd. singular*; 241 + V [B] + 62 + 101 + 112 *2nd. plural*; V + 62 *3rd. singular*; V + 41 + 62 *3rd. plural*.

Formations for tense and mode are V + 71 *present ordinary action*; 271 + V + 71 *past ordinary action*; 272 + V + 71 *future ordinary action*; 251 + V + 71 *continued action, or polite command (in the negative)*; V + 72 *present perfect*; 271 + V + 72 *past perfect*; V + 73 *past factual*; 251 + V + 73 *intentionally remote past factual*; 271 + V + 73 *conditional*; 271 + 251 + V + 73 *past conditional*; 273 + V + 73 *imperative*; 273 + 251 + V + 73 *strong imperative (in the negative)*; V + (22–25) + 72 *present process*; 271 + V + (22–25) + 72 *past process*.

4. Implicit categories vs. zero morphemes. While this paper was in the process of revision from Aschmann's earlier analysis which included several zero morphemes, to the present analysis which includes none, an article by Olmsted[12] appeared which bears on the theoretical problems involved and does service to the field of linguistics by bringing the issue of zero morphemes squarely into the open for discussion.[13] Olmsted treats a problem analogous to the Totonac situation, in which certain overtly marked categories in Yoruba contrast with categories not overtly marked, and attempts to state criteria that justify the recognition of zero morphemes in such cases. In so doing, he follows explicitly what numerous other linguists have from time to time followed implicitly; i.e. he elevates to morphemic status the absence of phonemic material if and when such an absence contrasts with the presence of all overt morphs (one or more) that may occur in the same position, and recognizes this absence as a covert or zero morpheme.[14]

Such a technique leads to a structural statement that is neatly symmetrical with regard to a given paradigmatic series; and if symmetry were the ultimate criterion of structure, this analysis would have a high degree of validity. But languages, as is generally recognized, are not one hundred per cent symmetrical; and their structural statements should be designed to reveal their features of asymmetry as well as of symmetry. We would hardly, for example, phonemicize English 'pin' as */OpOin/ with zero phonemes to fill in the positions occupied by overt phonemes in 'spin', 'prim' and 'spring'—although Olmsted explicitly states that, at least in the establishing of morphemes, "LACUNAE in a PATTERN are as important as the overt parts of the pattern" (emphasis his).

Olmsted implies that the linguist who objects to his covert morphemes for Yoruba would do so on the ground that they were set up to handle categories overtly expressed in other languages, a procedure which he correctly says would result in "opening a Pandora's box of zero morphemes." But it should be noted that even within his structural criteria for covert morphemes, the Pandora's box is still left wide open,

[12] David L. Olmsted, Covert (or Zero) Morphemes and Morphemic Juncture, IJAL 17: 163–66 (1951).

[13] Nida (op. cit., p. 46) discusses allomorphic zeros vs. morphemic zeros, with the latter described as a significant absence in a series of morphemes rather than in a series of allomorphs. He cites the Totonac third person singular subject as an example of a morphemic zero, which was in accord with Aschmann's earlier analysis. However, Nida considers that "both types of zeros are structurally pertinent," and merely warns that "one should . . . avoid the indiscriminate use of morphemic zeros." No criterion is given to determine at what point their use becomes indiscriminate; this is presumably left to the esthetic judgment of the linguist.

[14] This is not to be confused with a zero alternant of an otherwise overt morpheme; many of these appear in the present analysis of Totonac. Compare footnote 13 for the distinction between the two types of zero.

albeit for reasons that he does not give. In English, for example, it would not only lead to the recognition of zero noun suffixes for singular and non-possessive to contrast with the suffixes {əz} plural and {əz} possessive which occur in the same position (this closely parallels the treatment of Yoruba), but if extended to syntax paradigms it would lead to a virtually unlimited number of zero morphemes establishable by structural criteria. One such paradigm, that having the positions of pronoun + verb + adverb, will suffice to illustrate: *I sang well*; *I sang loudly*; *I sang merrily*; . . . ; *I sang*. The last form of this series would be analyzed as containing a covert or zero morpheme in the adverb position, defined in Olmsted's terminology as "absence of all the . . . overt morphs [or morph sequences—WLW] that may occur in that position" and presumably possessing the meaning of 'absence of qualification of the action'. The possibilities of this technique are fantastic.

Olmsted formulates and rejects what we consider to be the structurally valid solution: "All [Yoruba] verb stems are inherently positive, indicative, present and punctual unless modified by inflection." He rejects it "in view of the relative paucity of . . . material," but without stating any theoretical objection to it. This solution is the same in principle as that adopted for Totonac in the present paper, with regard to categories that are implicit either in stems or in affixes. The most conspicuous of these are the categories implicit in verb stems as described in **1.3**. The alternative treatment, i.e. the one admitting zero morphemes, would begin by setting up a zero morpheme for third person subject contrasting with the overt first and second person subject affixes, and another zero morpheme for third person object (i.e. the one object if the verb is monotransitive, the transient object if it is multitransitive) contrasting with the overt first and second person object affixes. Constant or unchanging third person objects of multitransitive verbs would remain implicit in the stems even in this analysis, since they do not contrast with overt morphemes in the same positions.

But these two zero morphemes are merely the beginning. Each of the third person zero morphemes may be accompanied either by suffix 41 (plural) or by its absence (singular), so we would then set up a third zero morpheme to mark singular. The zero third person subject morpheme may be further accompanied either by suffix 61 (unidentified subject) or by its absence (identified subject), so we would set up a fourth zero morpheme to mark identified subject. Suffix 71 (ordinary action) may be accompanied by suffix 271 (past) or by 272 (future) or by the absence of both (present); by following the same criteria we would then set up another zero morpheme to mark present (instead of attributing to 71, as we now do, the implicit meaning of present tense which is described as signified unless a different tense is marked by 271 or 272). A similar zero morpheme would be set up for each of the other meanings that we have described in the present paper as implicit in one or more affixes.

The Totonac verb pucay *he looks for him* consists overtly of the stem -puca- and the suffix -y, and is now structured as V^{al} + 71. Implicit in this V^{al} stem are third person singular identified subject and third person singular object; implicit in suffix 71 is present tense. In Aschmann's earlier analysis, he treated certain of these categories as zero morphemes; we now find that if this were done consistently in line with the above paragraph, what we now treat as simply a bimorphemic sequence V^{al} + 71 would then become a sequence of eight morphemes, six of which are zeros: V^{al} (lexical meaning only) + 0 (3rd pers. subj.) + 0 (sing. subj.) + 0 (identified subj.) + 0 (3rd pers. obj.) + 0 (sing. obj.) + 0 (present) + 71 (ord. action).

The structuring of Totonac with cate-

gories implicit in overt morphemes rather than borne by separate covert morphemes results in both a simpler morphemics and a simpler tactics. It does lead to a somewhat more complex semantics, inasmuch as all of the verb stems and certain of the affixes are made to be associated with one or more meanings additional to their basic meanings, and our structural statement must cover the circumstances under which these additional meanings are present or absent. However, the association of a single morpheme with more than one structurally identifiable meaning is nothing novel in itself—it is familiar to us as one of the characteristics of the so-called inflectional languages, in which a single affix may simultaneously mark several categories. Greek -ω in λύω, for example, marks five structural categories, at least some of which are not found as separate morphemes so as to permit -ω to be structured as a portmanteau, much less as five different overt morphemes.[15] Hence the semantic complexity involved in implicit categories presents no new theoretical problem.

The categories treated in sections **1** and **2** as implicit in Totonac verb stems and affixes may be summarized in the following list (all implicit categories are transient except that of constant third person singular object):

Third person singular identified subject: implicit in all verb stems.

Third person singular object: implicit in all monotransitive and multitransitive verb stems.

Constant third person singular object (one or more): implicit in all multitransitive verb stems.

Present tense: implicit in 71 (ord. action), 72 (perfect) and 22–25 (positional).

Past tense: implicit in 73 (factual).

Singular: implicit in 101 (2nd pers. obj.) and 261 (1st pers. excl. subj.); also in verb stems as noted above.

Ablative: implicit in 211 (movement and return).

Inclusive: implicit in 91 (1st pers. pl. subj.).

The meanings of implicit grammatical categories are considered to be secondary meanings associated (transiently or constantly) with morphemes that have another basic or primary meaning. The assigning of secondary status to the implicit meaning is validated by the following structural criteria, either or both of which may apply to a given morpheme: (1) The secondary meaning may be an overriding meaning common to more than one morpheme (this is true of all the Totonac categories implicit in verb stems, and of those that are implicit in more than one affix). (2) The secondary meaning may be transient; i.e. absent, in certain contexts, from the morpheme or morphemes with which it is regularly associated (this is true of the Totonac implicit categories except for the constant third person singular objects of multitransitive verbs).

In general, implicit categories or secondary meanings are to be found in many (perhaps most or all) language structures. They have hitherto been, for the most part, structured as zero morphemes or else glossed over without adequate treatment. More detailed work on these features in various languages will no doubt be rewarding from the standpoint both of morphemics-tactics and of semantics.

[15] See Eugene A. Nida, The Identification of Morphemes, Lg. 24. 414–41 (1948), esp. pp. 437–38.

PHONEMES OF MOTILONE (CARIB)

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1. Description
2. Distribution

1. Motilone[1] has 12 consonant phonemes: p, t, k, č, ç, ʔ, s, š, m, n, w, y; and 12 vowel phonemes: i, e, a, o, u, ï, į, ę, ą, ǫ, ų, ɨ. It also has prosodic phonemes of stress: /ˊ/, and length: /·/.

1.1. Consonant phonemes are divided into two groups; stops and continuants. Stop consonants are p, t, k, č, ç, ʔ. p, t, k are voiceless, bilabial, alveolar and velar stops respectively. č, ç are alveopalatal and alveopalatal-retroflexed affricates. These consonants are all post-aspirated in word initial position, and following continuant consonants: [pʰá·ši] pá·ši *pot*; [mpʰó·neʰtʰʌ] mpó·neta *you wrinkled*; [tʰamú·ne] tamú·ne *wide*; [ntʰó·nʌ] ntó·na *he has gone*; [kʰá·yi] ká·yi *high*; [mé·skʰanʌ] mé·skana *you bit*; [čʰǫ́·yi] čǫ́·yi *where?*; [nčʰo·ʰkʰanʌ] nčó·kana *he killed*; [çʰú·ʰkʰanaʰpʰʌ] çú·kanapa *I inserted*; [sçʰɪ́·sas] sçɪ́·sas *I will raise.*

Elsewhere, these consonants have both post-aspiration and a light preaspiration: [á·ʰpʰyïše] á·pyïše *he wants very much*; [pʰó·ʰtʰʌ] pó·ta *my mouth*; [tʰá·ʰkʰas] tá·kas *to vomit*; [á·ʰčʰo] á·čo *which ?*; [ó·ʰçʰʌ] ó·ça *yes.*

When two stops occur together in a cluster, the post-aspiration of the first member of the cluster and the preaspiration of the second member are assimilated into a single feature of aspiration: yo·sáʰtʰpʰe yo·sátpe *joke.*

ʔ is a voiceless, unaspirated, glottal stop: waʔá *no !*. This consonant has an allophone which occurs preceding other consonant phonemes and consists phonetically of a brief hiatus. This we shall symbolize phonetically as [ʁ]: [pʰóʁtʰʌ] póʔta *white edible worm.* The allophone [ʔ] occurs elsewhere.

Continuant consonants are m, n, s, š, w, y. m and n are voiced, bilabial and alveolar nasals: má·na *here*; ó·na *to you.* Both m and n appear to be phonetically syllabic in word-initial position before homorganic stops: [mpʰó·neʰtʰʌ] mpo·neta *you wrinkled;* [ntʰó·nʌ] ntó·na *he went.* n has an allophone [ŋ] which occurs preceding velar stop k: (sáŋkʰWsˢmʌ] sánkwsma *you will eat meat.*

s and š are voiceless, alveolar and alveopalatal sibilants: só·wa *arum*; ša *sweet potato.* s and š have allophones [sˢ] and [šˢ][2] which occur before nasal continuant m: [ïnstʰúWsˢmʌ] ïnstúwsma *you will give it to me*; [óš tʰó·sˢmʌ] óš tó·sma *where are you going?.*

w and y are voiced, bilabial and palatal semivowels: wą́·yi *bad*; yó·ma *his arm.* w has a voiceless allophone [W] which occurs preceding other consonant phonemes:

[1] This paper is based on the dialect of Motilone spoken in the Eroca Valley of the Andes mountains, located in the northeasternpart of the Department of Magdalena, Colombia, S.A. The major part of the data used have been gathered by the author, while working in the field under the sponsorship of the Evangelical Union of South America, during the years 1948–1950. Supplementary data have been furnished by Alick Clark and Ernest Fowler, also of the Evangelical Union. By far the greater part of the material has been obtained from various monolingual informants.

I am greatly indebted to Eugene Nida of the Summer Institute of Linguistics for his aid in checking the material during a visit to the field under the auspices of the American Bible Society, and to Viola Waterhouse and Kenneth Pike, also of the Summer Institute of Linguistics at the University of Oklahoma, Norman, Oklahoma, for their help and suggestions in the organization of the data used in this paper.

[2] This allophonic type possibly results from open transition between the consonants.

[sáŋkʰWsʷmʌ] sánkwsma *you will eat meat*; [tʰčá·ʰkʰWya] tčá·kwya *herb used in soup*. y has a voiceless allophone [Y] which occurs preceding other consonant phonemes: [máYpʰo] máypo *on here*.

1.2. Vowel phonemes are divided into two groups: oral and nasalized.

Oral vowels are i, e, a, o, u, ï. i and e are high and mid, front, close, unrounded vowels respectively: má·yi *here*; ená·napa *I ate*. i has a glided allophone [ʷi] which occurs following p and m: [pʰʷínʌ] pína *already*; [mʷí] mí *dry corn*. e has an open allophone [ɛ] with which it occurs in free variation: [mašéte] or [mašéte] *sky*.

a is a low, central, open, unrounded vowel: wá *no*. a has an open, mid, central allophone [ʌ] which occurs in unaccented, word final position: [má·nʌ] má·na *here*.

o is a mid, back, close rounded vowel: ntó·nako *he went long ago*. o has a low, close allophone [ɔ] with which it occasionally varies in unaccented syllables: [wɔʰčʰe ~ pʌ] woče?pa *woman*. o has also a voiceless allophone [o][3] which occurs occasionally in free variation with o in word final position: [-naʰkʰo] -nako *remote past suffix*.

u and ï[4] are high, back, close, rounded and unrounded vowels: stúwsas *I will give*; tïwó?če *talk*.

[3] It has not been possible from my present data to determine definitely whether [o] is simply a free variant of /o/, or whether, as noted in the data of Mr. Clark, it has phonemic significance. It may possibly act as an augmentative of past time, in which case the following distinction would be made: mitó·nako *you went a long time ago;* mitó·nako *you went a very long time ago*.

[4] Following the allomorph -k of morpheme -ko ~ -k, a voiceless release of the quality of [ï] is sometimes heard. Whether this release constitutes a phonemic vowel, or is simply the phonetic actualization of the aspiration of the stop, remains to be proved. It appears, however, to contrast with word final /ï/ and other word final voiced vowels, hence would have to be considered a separate phoneme in its own right. The fact of its limited distribution and, further, that the only other voiceless vowel noted in the language is the rather uncertain [o] noted above in footnote[3], would seem to lend weight to possible interpretation as a non-phonemic release of the stop. Further data, on the other hand, may indicate other factors which would make clear the necessity of treating [ï] as a full phoneme.

Nasalized vowels are į, ę, ą, ǫ, ų, ĩ. į and ę are high and mid, front, close, unrounded, nasalized vowels respectively: tomá·ščį *play*: tpú·se *to roast*. į has a glided allophone [ʷį] which occurs following p: [pʰʷí·yʌ] pí·ya *eyeglasses*. ę has an open allophone [ɛ̨] which occurs occasionally in unstressed, word final position: [yî·šɛ̨] yî·šę *his foot*.

ą is a low, central, open, unrounded nasalized vowel: yïká *for*. ǫ is a mid, back, close, rounded, nasalized vowel: a·kǫ *brother*. ų and ĩ are high, back, close, rounded and unrounded, nasalized vowels: yïpú *his skin*; kĩ?na *raw*.

1.3. Prosodic phonemes are stress /ˊ/ and length /·/. Stress is phonemic as seen in á·ko *friend* and a·kǫ́ *brother*. In general however, stress occurs on a long vowel: tó·makači *work*. If there is no long vowel in the word, stress usually occurs on the penultimate vowel: tá?špo *dig*. But note also minéš *don't look!*. In words containing more than one long vowel, the penultimate long vowel is usually stressed: ne·ká·ta *he died*. A second stress occurs in some words: sá·kusékyapa *I'm going to eat*.

Length may occur on any vowel, oral or nasalized, except in word final position: kí·yi *that way*; wé·tača *no fire*; yá·yo *excrement of tiger*; ó·yi *over there*; kú·na *water*; mî·nï *house*; pí·ya *eyeglasses*; amé·ča *today*; yą́·yo *beam of house*; akǫ́·ši *my little brother*; kiyú·čač ésma *you won't leave me*; sɛ̨́·yi *right here*.

Tone or intonation may prove to be phonemic, but at present there is insufficient data regarding this. The following word pairs, the only ones in our data, would seem to indicate the possibility of lexical pitch. (¹ refers to a higher pitch level, ² to a lower pitch level): kó·¹⁻²ko¹ *night* and kó·²ko¹ *dry*; yá·¹⁻²či¹ *opposum* and yá·²či¹ *leaf*. Further

investigation is necessary, however, to ascertain whether or not such contrasts remain when the words are uttered in context. Since the only pitch contrast so far observed is that shown above: 1–2 contrasting with 2, further investigation is also necessary to ascertain whether there are further contrastive pitch types, or whether the features are analyzable in terms of pitch stress. Intonation contours can readily be heard, but are unanalyzed as yet.

2. Distribution. Word[5] patterns in Motilone are many and varied. The only major limitation appears to be that no vowel clusters occur within the word. Clusters of from two to six consonants occur. The following examples illustrate the general types of sequences possible: CV wá *no*; VC óč *thus*; CVC wąt *however*; VCV ó·ça *yes*; CCVC pkát *finished*; CVCC mámš *little mother*; VCVCV owá·ya *the earth*; VCVCVCV é·namopa *I hung corn*; CVCCV kĵ̊ʔna *crude*; CCVCCCV tčá·kwya *herb used in soup*; CVCVCCV yo·sá·tpe *joke*; CVCVCC ná·watk *later* (in past); VCCVCVCV á·pyïpí·ne *he loves much*; VCVCVCCV amé·čatka *right now*; CCCVCCV kwčáʔčï *mud*; CVCCCVCV tóʔsyapa *I will go*; CCCVCCCCVC šwká·špčkaʔ *little son* (plus morpheme of assurance); VCVCVCCCCCCV o·kanó·psktpse (meaning uncertain).

2.1. Distribution of single consonants. Any stop may occur in word initial, medial or final position. Initial: pá·mo *salt*; tá·pi *why?*; ká·yi *high*; ʔé·kap *quickly!*; čó·yi *where?*; čú·kanapa *I placed it.* Medial: nó·pa *what?*; neká·ta *he died*; nïkátna *he has said*; waʔá *no!*; á·čo *which*; á·ça *bean.* Final: ʔé·kap *quickly!*; pkát *finished*; kíytok *go that way*; kóʔ *exclamation*; káč *then*; á·wič *mine.*

Any continuant may occur in word initial or medial position. Initial: só·wa *arum*; šá·mpi *large*; má·pi *near*; wá·šna *there is none*; yé·ma *my hand.* Medial: kú·si *bread*; yá·šnakyapa *I'm tired*; á·mo *you*; wá·no *I know*; awá·no *you know*; má·yi *here.* Only s, š, y occur word final: ttáyikas *to hang*; ná·šuš *little sister*; tuwéšnay *it was.*

2.2. Relation of consonant to consonant within the word. The distribution of consonants with relation to each other is quite free. The only major systematic limitations[6] noted are that ʔ never follows any consonant, and clusters of identical consonants have been observed only in the infinitive form: ttáyikas *to hang.*

Any of the consonant phonemes may occur as the first member of a consonant cluster. Any except m, n, y, ʔ may occur medially in a cluster, and any except ʔ may occur finally in a cluster.

Consonant clusters may occur in word initial, medial and final position. Initial: tkumá·čko *one only*; šwkaši *little son*; ntó·ta *he went*; tča·kwya *herb used in soup.* Medial: yá·tpe *I think*; šá·mpi *large*; tčá·kwya *herb used in soup*; nóʔša *it is boiling.* Final: pinátk *already*; kokó·yipsk *last night*; mámš *little mother.*

Consonant clusters may be composed of from two to six consonants combined in nearly random order. Further examples may be noted throughout the paper; the following are illustrative of some of the

[5] On the basis of present data, a word is defined in the traditional way as a minimum free form.

[6] The specific limitations as based on available data do not appear to be systematic. Further data may indicate more significant restrictions on sequence types which may occur. The following are those which have been noted thus far: p does not precede nor follow p, w; t does not precede w, y nor follow y; k does not precede k nor follow k, y; ʔ does not precede č, w, y nor follow any consonant; č does not precede č, s, š, w nor follow č, č̨, w, y; č̨ does not precede č, s, š, w, nor follow n, y; s does not precede s, š, w, nor follow č, č̨, s, š, y; š does not precede s, š, nor follow č, č̨, s, š, w, y; m does not precede m, n, w, y, nor follow m, n, y; n does not precede p, č, š, m, n, y, nor follow š, m, n, y; w does not precede p, č, š, w, nor follow any other consonants than k, š, n; y does not precede any consonants except p, t, nor follow t, m, n, y.

possibilities. The cluster may consist of 2 or 3 stop consonants: tkú·ma *one*; kčé·po *scorpion*; sú·ktpu *for cutting*; sę́·ptpo *for teaching*; of from 2 to 4 continuant consonants: mámš *little mother*; yá·šna *tired*; amó·msya *I enter*; spó·msna *he will sow*; sumé·nwsya *I will write*; of from 2 to 6 stops and continuants: nčó·kana *he has killed*; á·kši *younger brother*; ká·mpš *few*; yá·ntpe *I myself*; ayá·pščkok *lightly*; yaná·čpsčukas *join by inserting*; ánkwpnas *let's eat meat*; o·kanó·psktpse (meaning uncertain).

2.3. Distribution of vowels. Any of the oral vowels except i may occur in word initial position: é·šo *tiger*; á·pi *plenty*; ó·ta *what?*; ú·tpu *I'm going*; ïyá·kata *I finished.* Any may occur in word medial or final position. Medial: neká·ta *he died*; ká·yina *it is high*; ka·yípa *fast!*; nó?šna *it is boiling*; kú·na *water*; mïtó·ta *you went.* Final: má·yi *here*; tamú·ne *wide*; awî·na *to me*; á·čo *which?*; sú·mptu *for washing*; á·wï *I.*

Distribution of the oral vowels in relation to the consonant phonemes appears to be quite free; the only systematic limitation[7] noted is that none of the oral vowels except a follows ?.

[7] The only further limitations noted in the distribution of the oral vowels in relation to consonants is that e does not follow č and i does not precede č, ę́ or m. Such non-systematic limitations may be removed with further data, or may be due to limited distribution of the consonants.

Of the nasalized vowels, only a and e occur in word initial position: á·yamopa *I placed it*; é·saçayinapa *I have seen.* Any may occur in word medial position: pį́·ya *eyeglasses*; wa?tę́·ya *civilized person*; yą́·tpe *I think*; čǫ́·yi *where?*; yú·nuk *I found*; kį̂?na *crude.* Any except ï may occur in word final position: tomá·ščį *play*; tpú·se *to roast*; yíša *mother*; yičǫ́ *dry season*; pí?čų *dog.*

No systematic limitations have been noted in the distribution of nasalized vowels with relation to consonants. There are, however, definite nonsystematic gaps[8] which may be filled as further data can be examined.

As noted above (**2.**) there are no vowel clusters within the word. Between words within longer utterances, however, clusters of two vowels may be noted: nó ó·šna *to whom does it belong?*; á·mo awá·no *you know.*

[8] The specific limitations of distribution of nasalized vowels in relation to consonants are as follows: ę has not been observed preceding ? or m, nor following k, ? or č; į has not been observed preceding any consonants except w and y, nor following any consonants except p, č, š; ą has not been observed preceding any consonants except p, t, k, s, y, nor following p, ?, ę́; ǫ has not been observed preceding any consonants except p, t, ?, š, y, nor following ?, s, š; ų has not been observed preceding ?, č, š, nor following any consonants except č, m, n, w, y; į has not been observed preceding any consonants except t, k, ?, m, n, nor following any consonants except t, k, č, s.

Examination of further data will undoubtedly indicate wider distribution of the nasalized vowels.

THE PRINCIPAL GRAMMATICAL FORMATIVES OF ISLAND CARIB (C. A. DIALECT)

DOUGLAS TAYLOR

DOMINICA, BRITISH WEST INDIES

1. Prefixes
2. List of suffixes
2.1. Adjectival and adjectivalizing suffixes
2.2. The adverbializing suffix -ina
2.3. Nominal and nominalizing suffixes
2.4. Locator formatives and suffixes
2.5. Verbal and verbalizing suffixes
2.5.1. Thematic affixes and minimum sequence
2.5.2. Secondary thematic suffixes
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2.5.4. The causative
2.5.5. The participial
2.5.6. The passive
2.5.7. Inflexional suffixes
2.5.8. Auxiliary verbs
2.5.9. Non-thematic verbs
2.6. Polyvalent suffixes

1. Prefixes are classed by decades according to their relative positions with respect to the stem:

30. n✱-, b✱-, l✱-, t✱-, uA-, h✱, hA-, (31–37, person-marker prefixes)
20. i- ∼ u- ∼ (rarely) a- (21, nominalizer); a- ∼ e- ∼ i- (22, verbalizer)
10. gA- ∼ hA- (11, attributive); mA- (12, privative); adjectivalizing.[1]

[1] Before VC-, before any vowel cluster other than those with initial i- or u-, before any vowel cluster in which the first or third vowel is accented, and before any of these plus initial h- (which is lost), ✱ equals zero. Before CV-, this symbol usually equals a vowel determined by vowel harmony according to the following rules: i.i, e.e, o.o, u.a when the intervening consonant is labial, i.a when the intervening consonant is not labial, u.u; exceptionally, it may equal /i/ before a labial or other consonant followed by /u/, (i.u). Before initial clusters of iV- or uV- other than those comprised under the first statement above, the value of ✱ is largely a matter of interpretation. Personally, I prefer to regard it as zero (in free variation, before u- followed by /i/, /e/, /ei/, or /ai/, with /i/); and to say that the resultant -iV- or -uV- becomes disyllabic with semivowel glide. So 31 + iamádi [yamádi] *basket* = niámadi [nʲámadi] *my basket*, 34 + uagábu [wagábu] *post* = tuágabu [tŭʷágabu] *her post*, and 33 + uénedu [ụ̈énedu] *dream* = luénedu [lŭ̈énedu] ∼ liuénedu [lɪ̈ụ̈énedu] *his dream*. Alternatively, ✱ in this position might be interpreted as /i/ before iV- and before u-followed by a front vowel or diphthong, and as /u/ before other uV-.

With certain exceptions (listed below), the symbol A equals /a/ before a consonant or before a vowel cluster with initial i- or u-, and absorbs other initial vowels. However, A is assimilated to vowel harmony with a following /e/, as in 35 + íleme *fire* = uéleme *our fire*. The following list is exhaustive of the exceptions contained in my data: (a) úi *portion of meat* has its initial vowel absorbed by A, as in 12 + úi + -tI (157.5) + -i (159.3) = máiti *he's without meat*, (contrast 12 + híu *body-hair* + -tI + -i = máiuti *he's hairless*); (b) -íbe, íbegu *kind* (*natural group*), íbiri *half* or *younger brother*, íri *name*, -ísię *quality exciting love or liking*, ítara *so much*, *such*, *like that*, *thus*, and į *fruit or seed as hanging from the tree* retain initial (accented) í- after A, which equals zero in these cases, as in 11 + -ibe = gíbe *much or many*, 12 + -ibe = míbe *little or few*, 35 + íbegu = uíbegu *our kind*, 37 + íbiri = híbiri *half of them* or *their younger brother*, 11 + íri + -ba (157.1) + -ią (159.7) = gíribaią *they will be called* (*named*) 37 + -ísię = hísię *their quality of pleasing*, homonymous 11 + -ísię = hísię *pleasing* (*adjective*), 12 + -ísię = mísię *displeasing*, 12 + ítara + 157.5 + 159.4 = mítaratu *she's not like that*, 11 + į + -ha (157.3) + -r (158.2) + -u (159.4) = gíharu *fem. -it has fruited*; (c) -uni ∼ -ụ (the former alternant appearing with class 10 prefixes, the latter—except in ceremonial speech—with those of class 30) *purpose* or *to* or *for*, -udi or -idi (local variants) *departure* or *going*, and -iabi *coming* retain the initial vowel after A, which is actualized as /a/ except in the case of 12 before -idi (but not before -udi) or -iabi, where it equals zero, as in 11 + -uni = gáuni *worth while—having purpose*, 35 + -ụ = uaụ *to or for us*, 12 + -udi/-idi = máudi/mídi *not going*, 12 + -iabi = miábi *not coming*, but 37 + -idi = háidi *their going*, 35 + -iabi = uaiábi *our coming*; (d) 11 + iárani *power or ability*

All three positions are actualized when a person-marker of class 30 is added to a noun or to a thematic verb derived by a prefix of class 20 (together with an appropriate suffix) from an attributive or privative denominal adjective containing a prefix of class 10. So 34 + 21 + 11 + émei *priming or bait* + -ri (131.4) = tigémeri *her spark* or *her kindling*, 34 + 21 + 12 + ílao *contents* + -li (131.3) = tumálali *her voice*, 34 + 22 + 11 + árani *medicine* + -ha (151.5) = tagáraniha *she treats or deals with remedial agents*, 33 + 22 + 11 + ári *tooth* (*teeth*) + -da (151.3) = lagárida *he gives pain* (*or injury*). The intermediate forms are adjectives: géme *primed* or *touchy*, mála *empty*, gárani *remedial* or *having medicine*, gári *painful* or *having teeth*; nouns: igémeri *spark* or *kindling*, umálali *voice*; and thematic verbs: agáraniha *to herborize, etc.*, agárida *to give pain*.

When three prefixes occur, the second must belong to class 20, the third to class 10; and since no prefix can, under any circumstances, precede one of class 30, the relative positions are as given. However, members of class 30 or of class 10 may occur in any actual position; and it should be noted that both those belonging to the latter class, or either one of them twice over, may occur in the same word. So 34 + 21 + so *ardent* = tíso *her ardor*, 34 + 22 + so + -ha (151.5) = tásoha *she stings*, 11 + 22 + so + 151.5 + -di (131.2) = gásohadi *able or disposed to sting*, 33 + árani = lárani *his medicine*, 34 + ílao = tíla *her contents*, 12 + 21 + 12 + ílao + 131.3 = mamálali *voiceless*,—a doubly denominal adjective.

Prefixes occur in non-thematic verbs only insofar as these may be derived from adjectives, nouns, or thematic verbs that contain them; only person-marker prefixes (30) occur in auxiliary verbs; none occurs in locators or in any other word-class. Exceptionally, adverbs in -ina (121, see **2.2** below) may be derived from thematic verbs having free stems; so, from the loanword 22 + fala *follow* + -ra (151.8) = afálara *to follow*, comes afálaràina *by following* (*his voice, they . . .*), as well as more regular faláina (with the same meaning). Such a construction is regular, however, when the underlying form is a verb whose thematic prefix (22) has been absorbed by stem-initial vowel, or is otherwise non-detachable, as with middle-voice aiáhua *to weep* + -ha (152.3, tensive) + -ina = aiáhuahaina (*she went away*) *weeping*.

2. Sequences of up to eight suffixes have been recorded; but because of the facility

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= giára *possible or able*, (no forms having 12, 35, or 37 with this stem were heard).

The nominalizing prefix (21) and the verbalizer (22) are distinct from the foregoing (*#* and A), because (i) they can occur without class 30 or class 10 prefixes, as in 21 + uíe *dirty* = iuíei *dirt* (change in word-final is here due to stem-alternation and not to suffixation, see footnote 2), 22 + húia *rain* + 151.9 (here equals zero) = áhuia *to rain or to pour down*; (ii) the nominalizer (21) does not reduce initial h- of adjectival stems, so 21 + héme *pungent* = ihéme *pungency or aroma*; and (iii) homonymous stems may take different alternants of 21, as in 34 + 21 + uáiri *big* = tiuáiri *her size*, but 34 + 21 + uai *old* + -ri (131.4) = tauáiri *her old man* (slang for *her husband*). This does not happen in the case of *#*. Ordinarily 21 appears either as i- or as u- (depending on vocalic harmony), and 22 either as a- or, when the first stem-vowel is /e/, as e-; but with some stems whose first syllabic vowel is /i/ (apparently only those having a labial consonant or u- as stem-initial), 22 appears as i-: so 22 + míra *stabbing* + 151.9 (here equals zero) = ímira *to stab*, 22 + uį *whistling* + -ra (151.8) = įuira *to whistle*.

The necessity for setting up the hA- alternant of 11 becomes evident when we compare such forms as hére *strong* (11 + -ere), lére *his strength* (33 + -ere), with a simple adjective like hóro *heavy*, and its nominal derivative lihóro *his weight* (33 + 21 + hóro). This alternant appears in a very few denominal adjectives and their derivatives, and as word-initial only. Recorded forms containing it are derived from the following nouns and nominal bases (a hyphen indicates stems not heard in absolute form)· anáimei *violence*, anúfudei *fear*, -ára *heat*, arítagu *thought*, -ére *strength*, ęu *male genitalia*, hítao *blood*, -ísię *quality exciting love or liking*. So 33 + anúfudei = lanúfude *his fear*, 11 + anúfudei + -tI (157.5) + -i (159.3) = hanúfudeti *he's afraid* (cf. 12 + anúfudei + -tI + -i = manúfudeti *he's unafraid*); 33 + hítao = líta *his blood*, 11 + hítao = háta *bleeding or bloody* (homonymous with 37 + hítao = háta *their blood*).

with which one word-class is derived from another, some suffixes—like class 10 prefixes—may hold more than one position in the word. They are therefore classed by decades according to their valency, subclasses (units) within each decade being listed in the relative order of their members' occurrence; those belonging to the same subclass (distinguished where necessary by decimals) are, so far as my data go, mutually exclusive.

110. Adjectival and adjectivalizing:
  111. -habu (propensive); -goda (= 154); -ua (= 156)
  112. -gua (112.1, stative—cf. 152.2 + 153); -gu (112.2, qualificative—cf. 152.2 + 155)
  113. -(u)ga (generalizing); -buri (= 134.2)
120. Adverbializing (and doubtfully adverbial):
  121. -ina (with meaning similar to that of the "Spanish gerund")
130. Nominal and nominalizing:
  131. -ni ~ -ne, -di, - li ~ -le, -ri, (131.1–131.4); -gole (131.5, instrumental); 159.7 occurs here as pluralizer with certain nouns denoting animate beings.
  132. -gua (132.1, reflexive—cf. 112.1); -gu (132.2, collective—cf. 112.2); -(u)ga (= 113); -bu *at*, -da *in*, -ha *at*, -rugu *in*, -uagu *upon*, (132.3–132.7, locational).
  133. -gie ~ -gee (directional—*out of/from, by way of*)
  134. -ų (134.1, directional—*to/toward*); -buri (134.2, inclusive).
140. Locator formatives and suffixes:
  141. -ha, -ra, -gVta, -gVra, -te, -g(u)ia, (141.1–141.6, primary suffixes indicating position or degree of distance).
  142. -į (non-demonstrative modifier of 141.1/2); 133 or 134.1 may occur here with one subclass of locators.
150. Verbal and verbalizing:
  151. -ba ~ -b, -ca ~ -c, -da ~ -d, -ga ~ -g, -ha, -ma ~ m, -na ~ -n, -ra ~ -r, -a ~ zero, (151.1–151.9, thematic-verb formatives).
  152. -ba ~ -b (reactive), -ga ~ -g (stative), -ha (tensive); 152.1–152.3, secondary thematic-verb suffixes.
  153. -ua ~ zero (mediostative)
  154. -goda ~ -god (causative)
  155. -UnE ~ -U (participial)
  156. -ua ~ -u (passive); 113 may occur here
  157. -ba (157.1, imperfective); -ią (157.2, progressive); -ha -a (157.3, perfective); -gi ~ -ge (157.4, durative—still); -tI (157.5, aorist and agentive); aspect-markers.
  158. -dI, -lI ~ -r, (158.1–158.2, copulas)
  159. -na, -bu, -i, -u ~ -ų, -ua, -o, -ią ~ -ių ~ -nu, (159.1–159.7, person-marker suffixes).
160. Polyvalent suffixes (occurring with several word-classes):
  161. -gubái (161.1, conclusive); -ia (161.2, repetitive—cf. enclitic iaų *once again*); -rao (161.3, diminutive); -rogo ~ -rog (161.4, restrictive—*only*); -meme (161.5, continuative—*keep on*); -giua (161.6, durative word-final—or perhaps enclitic—equivalent of 157.4, *still*). The first five of these, when not word-final, may be followed only by the sequence 157–159, or by part of it.[2]

[2] Alternation indicated in the above list of suffixes can be explained in part here, and partly in the relevant section of the text. The parenthetical vowel in -(u)ga (113) is actualized as /u/ after /a/ or /e/, the latter phoneme being thereby changed to /a/; elsewhere (u) in this suffix equals zero. Alternation shown in 131, 133, and 157.4 is free, although perhaps determined in part by vocalic harmony. In 141, V harmonizes with base-final vowel as follows· i..i, u..u, a..o; parenthetic (u) in -g(u)ia equals /u/ after base-final /u/, and zero elsewhere. Alternation in 151, 152, and 154 is described under **2.5.1**; that in 153 and in 156 under **2.5.3** and **2.5.6** respectively; while the symbols and alternation in 155 are explained under **2.5.5**. The perfective aspect-marker (157.3) appears as -a after 161.4, and, except when accented (in which case it retains the aspirate),

Moreover, the person-marker suffixes (159) occur in some primary words classed as particles, and as base-formatives with one subclass of locators; while 159.7 (as noted under 131 above) functions as pluralizer with certain nouns. So ahą- *if/when/then* + 159.4 = áhaų *if she*, or (as goal), *if . . . her, etc.*; haga- *where is?* + 159.3 = hagái *where is he?* higa- *come (imperative)* + 159.2 = higábu *come!* kata- *what/who is?* + 159.1 = kátana *who am I?* So also the predicative locator-root $\sqrt{N}$- + 159.3 + 141.2 + 142 = inìraį *he's there*, or *there is* or *there are* (of inanimate objects of masculine gender); while eiéri *man* + 159.7 = eiériu *men*, and 31 + amúlę *younger brother* + 159.7 = namúlenu *my juniors* (without distinction of sex).

2.1. Adjectives are simple, derived, or compound. In this they differ from verbs and locators, which are always complex. They also differ from most nouns, and from all thematic verbs and auxiliaries, in not taking the person-marker prefixes (30); and from all non-thematic verbs in not bearing aspect-markers (157). All privative adjectives should probably be regarded as denominal; so 12 + 21 + buídu *good* = mabuídu *not good—without goodness*, by analogy with 33 + 21 + buídu = lubuídu *his goodness*, although in the first example the nominalizer (21) is absorbed by the A of mA- (12). Some adjectives and their nominal derivatives, such as uríba *bad* and uríba + 131.1 = uríbani *badness*, cannot take the privative or any other prefix.

Functionally, adjectives may be divided into those that can either precede nouns as attributes, or serve as predicate complements; and those others—the vast majority—that occur only in the latter position. In their capacity as attributes, the former (which include numeratives and probably less than a dozen other adjectives) are either simple, or contain only a polyvalent suffix (161). Among the latter, which are simple, derived, or compound, stative adjectives in -gua (112.1) often are employed in equational predication, as in gumú *ended* or *consumed* + 112.1 = gumúgua barúru *plantains (are) done/at an end.* Thematic verbs may be derived from some adjectives of either sort, and non-thematic verbs from all of them.

Examples of adjectives that can function as attributes are ábą *one, a, the same, and*; ábą + 161.2 = ábaia *another, and again*; ámu *other (different)*; bíama ~ bía . *two*; binádo *former* (contrast bináro *formerly*), as in binádo hábię *their old home* (37 + -úbię *home* or *at home* = hábię *their home* or *at their home*); iséri *new;* órua *three*; sų *every* or *all*; sų + 161.1 = sų́gubài *all (of a number of separable entities)*. Adjectives derived by suffixes of subclass 111: híla *dead* or *unconscious* + -habu = hílahabu *inclined to die, weakly*; uogóri *man* (noun) + -habu = uogórihabu *manly*; 12 + gudéme *distress or pity* (noun) + -habu = magúdemehábu *pitiless*; deré *hard* + -goda = derégoda *made firm/taut*; gorá *binding* + -ua = goráua *bound (passive)*; so *ardent* + -ua = sóua *roasted (passive)*. Derived by suffixes of

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is usually absorbed by a preceding /a/ or /e/; in other cases it appears as -ha. In 157.5 and in 158, I equals /i/ before a consonant, zero before a vowel. The copula 158.2 appears as -r only (and always) when it is followed by 159.4; this latter morpheme having postconsonantal (-u) and postvolcalic (-ų) alternants. The person-marker suffix 159.7 appears as -nu only (and always) when it is preceded by the progressive aspect-marker (157.2), or when it is added as pluralizer to a noun ending in a nasalized vowel or vowel cluster; the nasalized vowel or vowel cluster to which it is added being thereby denasalized in both the above cases. The other two alternants of this morpheme, -ia and -iy, are in free or idiolectic variation; their most usual distribution has been given in a previous paper (IJAL 17.24). The polyvalent suffix -rogo (161.4) loses its second vowel when it is followed by the perfective aspect-marker (see above).

It may be noted here that the change of nominal stem-final exemplified in 33 + arónao *arm or wing* = laróna *his arm or wing*, 33 + arónei *captain* = laróne *his captain* is due to nominal stem-alternation, and has nothing to do with suffixation.

112: gudéme + -gu = gudémegu *piteous*; deré + -goda + -gu = derégodagu *confirming*; dĩli *cold* + -gu = dĩligu *coldish*; gári (11 + ári *teeth*) *painful* + -gu = gárigu *in pain*; mére (12 + -ere *strength*) *weak* + -gu = méregu *easy*; hére (11 + -ere) *strong* + -gu = héregu *difficult*; iere- + -gu = iéregu *hated* (a primary derivative); gorá ± -ua + -gua = gorágua *bound* (*stative*), goráuagua *in a state of having been bound* (*stative passive*); órua + -gua = óruagua *triple, three at a time*; géme (11 + émei, see under **1** above) + -gua = gemégua *sparkling, on fire, lit up*. And by those of 113: dĩli ± -gu + -(u)ga = dilíga *cold*, dĩligugà *coldish*, in reference to general environment such as the weather; hére (11 + -ere) + -(u)ga = hérauga *rough* (in reference to general environment such as the sea); funá *red* or *ripe* + -buri = funáburi *quite red* (*or ripe*); kai *like* or *as* + -buri = káiburi *about* (*near in number*), with multiple referent.[3] Compound adjectives may be exemplified by deré *hard* (*firm*) + gubú *fully charged* or *saturated* = derégubu *convalescent*; funá + gubú = funágubu *red to the utmost capacity*. As a free form, gubú is perhaps chiefly employed when inviting comparison, with the meaning (*if* . . .), *all the more*. . . .

2.2. The suffix -ina (121) appears to be of nominal origin; compare nĩuna (31 + -iuna) *my stem/stock/ancestry/origin* with nigína *my neck*, from earlier nisik *my head* + -iuna = nisĩuna *my neck*. Its most frequent function is that of adverbializing thematic verbs or their free stems (see last paragraph under **1** above). To stative verbs, it is added after -gua (152.2 + 153), as in ĩridaguáina (22 + ĩri *name* + 151.3 + 152.2 + 153 + 121) *by publicizing*, in which the thematic prefix (22) has been absorbed by stem-initial ĩ- of ĩri; with other than stative verbs, it can be added after 152, as in arúhudaha (22 + -aruhud- *show* 151.9 + 152.3) *to show* (*tensive*) + 121 = arúhudaháina *in such a manner as to show*, áunaba (22 + -au- *heed* + 151.7 + 152.1) *to answer* + 121 = áunabàina *answering* (*adverb*). With adjectival stems (whether these have thematic verbal derivatives or not), it can occur after 112.1, as in hudúgua (hudú *pounded* or *put down* + 112.1) *kneeling* (*adjective*) + 121 = hùduguáina *in a kneeling posture*, (cf. áhuduha *to pound*, áhuduragua *to kneel*); hámaru *slow, careful* + 112.1 + 121 = hámaruguáina *in a deliberate or careful manner*; bacárua (probably = bacá *warm* + -ra + 112.1) *drunken* + 121 = bàcaraguáina *drunkenly*; sógo *past* or *surpassing* + 121 = sogóina *in/while passing*.

Many adjectives also function as adverbs, and it is not clear whether -ina can be added to any purely adverbial particle. This would appear to be the case in hália *where* + 121 = haliáina *where belonging to, where originating*, (contrast hália + 133 = háliagiẹ *where from*, i.e., at the time); but if, as I suspect, the adjectivalizing class 10 prefixes are added only to nominal and participial stems, (and, in the case of 12, to indefinite thematic verbs to form the prohibitive complement), then such a form as 12 + hália + 134.1 = máliaų *nowhither* indicates that hália, by morphological criteria, is a noun; (see now the last two paragraphs of footnote 1). Another doubtful case is that of ĩtaga *thus, like that, such a, so much* + 121 = ĩtagàina *in such and such a manner*; since ĩtaga, infrequent as a free form, is said to be synonymous with ĩtara, which combines with 12 to form mĩtara *not thus, not like that*. The class-status of ĩtaga and ĩtara is therefore obscure; (see

[3] In its function as intensive, this is often a free form, burí (and might be interpreted as a stem in the case of funá burĩali *it-has-got-quite ripe*); thus the utterance: násiąrubài burí-tia kátai lèa adóga *I-cannot-future-it at-all it-is thing-masculine this do*—that is, *I'll be quite unable to do this thing*. This is not true of -buri in its "multiplicative" function, for which see the penultimate paragraph of section **2.3** below. Cf. also obsolete biąburi *four* (now replaced by borrowed gádoro), from bíama ~ bía *two* + -buri; and 22 + -buri- + 151.4 = ąburiga *to arrive at destination, to land*.

now under (b) in paragraph 2 of footnote 1 the list of nouns and nominal bases in ĺ-, which reduce A of CA- prefixes to zero).

2.3. Nouns are simple, derived, or compound; and can, for the most part, be inflected for pronominal possessor by prefixes of class 30. Some nominal bases occur only in possessed nouns and, with prefixes of class 10, denominal adjectives; some others cannot take any prefix. With selective and semantic limitations, all types of noun can take suffixes.

Functionally, nouns may be divided into those that, like úmari *spouse* (prefixable), núguci *my father* (without unprefixed form), barána *sea* (non-prefixable), may be employed as actor or as goal in an actor-action construction; and others, such as uágu *upon or about* (prefixable), núma *in my company* (without prefix only in derivatives), lída *in it* (without unprefixed form), ónabu *low* (non-prefixable), that function like adverbs or prepositions. Some function either way; so láru *its edge/border*, or *at the edge of it*; labádonagua *that which is between*, or *between it* (that is, *between them* of inanimate objects); líladi *his like*, or *like him*. Both simple and derived nouns occur in either division, but compound nouns have been found only in the former; most positional and adverbial nouns have no unprefixed forms.[4]

[4] It may seem inconsistent to set up a distinct class of adjectives, and yet to lump together as "nouns" words whose syntactic functions are as different as those of núguci *my father* and núma *in my company—with me*. Morphologically, however, these latter behave alike in every respect, and differ from the former not only in stem-alternation (as for example the treatment of initial h- in 33 + hálao *chair or seat* = lála *his chair or seat*, compared with 33 + 21 + hóro *heavy* = lihóro *his weight*), but also in their ability to form attributive adjectival derivatives; thus 11 + -úguci/-úma = gáguci *having (a) father*, gáma *being with* or *possessing*, but there can be no such form as *gabuidu *having goodness*, even though in this case the adjectival stem can be nominalized as in 33 + 21 + buídu *good* = lubuídu *his good/prettiness/intimacy*.

Suffixes 131.1 and 131.3/4 most frequently serve to derive nouns from adjectives, and in this capacity they appear to be synonymous. So garába *overturning* + 131.3 = garábali *wind or breeze*, gorá *binding* + 112.2 + 131.4 = goráguri *bonds*, gumúla *smoky* + 131.3 = gumúlali *smoke*,[5] iąua *disordered or troublesome* + 131.4 = iąuari *disorder or trouble*, uríba *bad* + 131.1 = uríbani *badness*; and, in conjunction with the nominalizing prefix, 21 + géme *primed* (see under 1 above) + 131.4 = igémeri *spark or kindling*, 21 + gųdá *glad* (from French content) + 131.1 = ugųdani *happiness*, 21 + mála *empty* (see under **1** above) + 131.3 = umálali *voice*.

Nouns derived by these suffixes are not always de-adjectival. The following are derived from other nouns: nibáią (31 + -iba- + 159.7, with which compare nibári *my grandchild*) *my grandchildren* + 131.1 = nibáiani *my progeny or descendants*, -úma- *in company of* + 131.4 = úmari *spouse or companion*, 21 + uóri *woman* + 131.4 = iuóriri *female cross-cousin (a man's)*, 21 + buídu *good* + 131.4 = ubuíduri *favorite or protégé*, whose immediate constituents are ubuídu *goodness, prettiness*, or *intimacy* and -ri (131.4). In one instance a noun has been derived from an adverb in -ina (121), and from a verb in another; so sógo *past* + 121 + 131.3 = sogóinali *times past—bygones*, túba (34 + -ba *will say*; besides its function as the imperfective aspect-marker, and as the imperfective auxiliary base, -ba also functions as a verb-base) *she'll say* + 131.3 = tubáli *her saying (what she says)*.

The suffixes -ni (131.1) and -ri (131.4) should probably be distinguished from the homophonous endings of the prefixed constructs on certain nominal stems, and which

[5] Compare with 22 + gumúla + 151.5 = agúmulaha *to smoke*. The stem, gumúla, is in all probability a compound of gumú *finished* or *consumed* with ílao *contents*, since, in compounding bases, $-V_1 + V_2-$ (the first, neither, or both being accented) = $-V_1-$. The adjective uríba *bad* also appears to be complex (cf. urí *black or dark*), although I cannot identify the second component.

are at best "empty morphs;" so 31 + dúna *water or river* = nidúnari *my river*, 31 + bádų *stick* (from French bâton) = nubáduni *my stick*, 12 + dúna = madúnari *waterless*. Nor should the suffixes 131.1 and 155 be confused, although historically they may be related; compare áiga *to eat* + 155 = áigini *food, meal*, or *eating* with the above (as in uríba *bad* + 131.1 = uríbani *badness*), and with the nominal base -áni *thing or possession*.

The main and apparently the only productive function of the suffix -di (131.2) is that which it occupies in derived attributive and privative adjectives such as gáfarahàdi (11 + áfara *to beat* + 152.3 + 131.2) *able or disposed to beat*, máiguadi (12 + áiga *to eat* + 156 + 131.2) *uneatable*, and whose stems are thematic verbs. Such adjectives, which I have called habilitative and inhabilitative respectively, may be analysed as 10 + THEMATIC VERB + 131.2; and since prefixes of class 10 (except for 12 in the prohibitive complement) are regularly added only to nouns and participles, it seems reasonable to assume that they are denominal, although no such nouns as *áfarahadi *ability or disposition to beat*, *áiguadi *fitness to be eaten* have so far been isolated. On the other hand, the word gaiúnari *ancestral cult-house* is a de-adjectival noun, and must be analysed as gaiúna (11 + -iuna *ancestry*) *ancestral* + 131.4. As a primary suffix, -di (131.2) appears to occur in a number of nouns, such as átuadi *robustness*, iméedi *jealousy*; while líladi *his like* or *like him* may possibly be analysed as líla (33 + ílao) *his contents* + 131.2.[6] The relationship, if any, between the suffixes 131.1–131.4 on the one hand, the participial suffix (155) and the copulas (158) on the other, is obscure.

The instrumental suffix, -gole (131.5), has been found with only one nominal stem, barána *sea* + 131.5 = baránagole *person of the sea*, a term which the Caribs sometimes apply to themselves and to white men from overseas, and which was formerly used to designate all white men. Ordinarily this suffix serves to derive instrumental nouns from thematic verbs, as in abuída *to sweep* + 131.5 = abuídagole *broom*, abʃara *to bewitch* + 131.5 = abʃaragole *sorcery* or *magic spell* or *poison*, áhina *to go for firewood* + 131.5 = áhinagole *small canoe used to transport firewood*, (as a free form, this last stem is usually stativized as áhinagua). Instrumental nouns are occasionally re-verbalized as nonthematic verbs in such constructions as 11 + abára *to cast off* + 131.5 + 157.5 + 159.3 = gabáragoléęti (dą) *it is drizzly (weather)*, 11 + agą́ba *to hear or to know* + 131.5 + 157.5 + 159.3 = gagą́bagoléęti *he is one who gets to know*. I cannot account for the /ę/ before 157.5 unless it belongs to an alternant of 131.5. These and similar forms are infrequent, as well as highly selective and idiomatic as to meaning.

The first two members of the second order of nominal suffixes, -gua (132.1) and -gu (132.2), are reflexive and collective respectively; and hence (if the distinction between nouns and adjectives is to be maintained) functionally different from the homonymous adjectival suffixes, 112.1/2. So 33 + íli *tail* + 132.1 = líligua *his own tail*, and 35 + uágu *about or upon* + 132.1 = uauáugua (showing reduction of the first /g/) *about ourselves*. Note that this suffix occurs after the positional noun uágu, but not after the homonymous suffix -uagu (132.7). Likewise with the collectivizer; 37 + úmari (-úma *in company of* + 131.4) *spouse or companion* + 132.2 = hámarigu *their spouses* (collective), 31 + umáda (possibly = 21 + 12 + ída *inside*) *friend* + 132.2 = numádagu *my friends*. Although the collectivizer often substitutes for the pluralizer, it supplements it in some cases such as nibáią (31 + -iba- + 159.7) *my grandchildren* + 132.2 = nibáiagu *my grandchildren as a collectivity* (see now nibáiani *my progeny*, earlier in this section).

[6] With the above compare also the phrase luáidi gia *apart from it* or *except that*, which contains the positional noun luai ~ luária *away from him/it*, and the stative particle gia (cf. Spanish estar).

In its function as pluralizer, 159.7 contrasts with itself as pronominal subject or goal of a verb, since it is always word-final in the latter function.

The generalizing suffix -(u)ga (113), described under **2.1,** also occurs with the nominal derivatives of adjectives to which it is appropriate, and with the participial form of the verb (see **2.5.5** below); so 33 + 21 + uíe *dirty* + 113 = liuíauga *its dirtiness* in general, in contrast to 33 + 21 + uíe = liuíe *its dirt* (in particular). Moreover, its occurrence with transferred meaning in such words as urínauga (= urí *black or dark* + 131.1 + 113) *yesterday*, and harúga (harú *white or light* + 113) *tomorrow* is quite transparent.[7]

The locational suffixes 132.3–132.7 appear to be themselves of nominal origin; with them compare the positional nominal bases -ábu *at or under*, -ída *in or inside*, Breton's "-írocou" *inside* (obsolete as a base), and uágu *about or upon* (which occurs as a free form). The first three are highly selective, and only -rugu (132.6) and -uagu (132.7) appear to be still productive. So áudo *town* + 132.3 = áudobu *at or in town*, óma *road or path* + 132.4 = ómada *in the path*, barána *sea* + 132.5 = baránaha *at sea* (this suffix has been found with no other stem), gaiúnari (11 + -iuna + 131.4) *ancestral cult-house* + 132.6 = gaiúnarirugu *in the ancestral cult-house*, ubáu *world* or lége *his shoulder* + 132.7 = ubáuagu (showing vowel reduction of -u + u- = -u-) *upon the world*, or légeuagu *upon his shoulder*. Perhaps because of their high degree of selectivity, there appears to be a tendency to make primary words of some forms containing these suffixes. Thus máinabu *at the manioc-field* is much more frequently heard than underlying máina *manioc-field*; the stem of béabu *at the landing-place* was not heard as a free form at all (although Breton recorded it as "béya"); while árabu *forest/bush* or *in the forest/bush*, and áriabu *night* or *at night*, though apparently unanalysable even in Bretion's time, probably contain the suffix -bu (132.3) since they sometimes have and at others have not the locative meaning. On the other hand, -rugu (132.6), although fully productive, is also employed with transferred meaning (especially in the names of body-parts), as in arónao *arm or wing* + 132.6 = arónarugu *armpit*, híu *prickle or body-hair* + 132.6 = iúrugu *pubic hair*. In such cases, it is quite possible for this suffix to follow itself, as in larónarugúrugu *in his armpit*.

The most usual meaning of the directional suffix -gię ∼ -geę (133) is *out of* or *out from*, particularly when it is preceded by one of the suffixes just described above (132.3–132.7); in other cases it sometimes means *by (way of)*, *at*, *through*, *etc.* So áudo + 132.3 + 133 = áudobugię *from town*, ganáli *deep sea* or *earthenware jar* + 132.6 + 133 = ganálirugúgię *from out of the deep sea* or *from out of the jar*, 33 + -ídą *in* + 133 = lídagię *out of it* or *by way of it*, 37 + -ídą + 133 = hádagię *from among them*, 33 + anága *back* (noun) + 133 = lanágagię *at his back* or *at the back of it*, 33 + igíbu *face* + 133 = ligíbugię *facing him/it*.

The directional suffix -ų (134.1) *to or toward* (with which compare the positional nominal base -úni ∼ -ų *purpose* or *to* or *for*) usually occurs in the same position as 133, of which it is the logical counterpart; so óma + 132.4 + 134.1 = ómadaų *into the path*, barána + 132.5 + 134.1 = baránahaų *to sea* or *into the sea*, anága + 134.1 = anágaų *back(wards)*. However, I also find

[7] With these forms compare 33 + -aruga- = larúga *the next day*, 33 + -aruga- + 131.1 = larúgani *the dawning*, 22 (absorbed) + -aruga- + -da (151.3) = arúgada *to dawn*. This suggests (see last paragraph of footnote 1) that harúga *tomorrow*, and therefore also harú *white or light*, are either themselves nouns (in which case larúni *its light or whiteness* = 33 + harú + 131.1), or else attributive denominal adjectives containing the hA-alternant of 11 (see footnote 1). The latter hypothesis appears to be the more plausible, for, while -aruga- itself is a bound form, the noun áru *border or edge, outline* differs only in accentuation from the presumptive stem or harú *white or light*.

the word tubáruagaų *ahead of her (reflexive)*, or better French au devant d'elle, and which I analyse as 34 + bára *before* + 132.1 + 133 + 134.1. This supposes the following sandhi: tubára *before her* + -gua (132.1) = tubárua *ahead of her (reflexive)*, or *for herself*, and -gię ~ -geę (133) + -ų (134.1) = -gaų. The former change I can parallel only with the doubtful case of bacárua *drunken* (see **2.2** above), but the latter definitely occurs in 32 + -árigię *after or afterwards* (in their adverbial functions) + 134.1 = bárigaų *to thy rear*, in which -árigię, which is purely temporal, equals -árigi *behind or after* (as prepositions) in spatial or temporal sense, plus -gię ~ -geę (133).

The suffix -buri (134.2) is found most often with positional nouns, where it indicates multiple reference when, as in the case of inanimate objects, this cannot be shown by a plural person-marker; so 33 + -ídą *in* + 133 + 134.2 = lídagiębúri *by way of it-inclusive* (i.e. *them*), with reference to tagóburi óma *overgrown path(s)*, plurality being indicated only by the suffix -buri in the positional noun. Similarly, luáiburi (kátai lèa) *beyond-them (these things)* contrasts with luai (kátai lèa) *beyond-it (this thing)*; and lúmaburi *together with them (inanimate objects)* contrasts with lúma *together with him/it* and with háma *together with them (animate beings)*.

Compound nouns may be exemplified by: anígi *heart* + úrugu *cavity* = anígurugu *chest*, béna *door* + ébu *support* = bénebu *threshold*, gąhį *manioc* + agóca *cutting* = gáįgoca *manioc-cutting*, mába *bee* + ídiga *dung* = mabádiga *wax*, uadábu *conch* + ágai *container* = uádabagài *conch-shell*, arígai *ear* + ílao *contents* = arígailao *earring*, in which two nouns are compounded; and eméni *withdrawal* + ígira *to leave* = eménigirao *hope* (and eménigira *to hope*). A few forms like águ-íu *eyelash(es)* (contrast líu tágu *his-hair her-eye*, that is, *the hair of her eyes*), and águ-írao *tear(s)* (contrast líra nágu *his-juice my-eye*, that is, *the juice of my eyes*) are doubtfully compound; phrase-like in their accentuation, they are contrary to syntactic pattern (see contrasting syntactic forms cited above), not to mention the loss of h- in híu *body-hair*.

2.4. Locators are derived primary words, some of which may take secondary suffixes. They may be sub-divided into three groups: those having the base ia-, those with a pronominal base, and those that have a complex base consisting of the predicative morpheme $\sqrt{\text{N}}$- together with a person-marker suffix (159).

Locators of the first group merely indicate position at, to, or from a place, and are inflected by any one of the suffixes 141.1–141.4 ± 133 or 134.1. So ia- + 141.1 = iáha ~ ia *here*, (the first alternant is today ceremonial, the second colloquial); ia- + 141.1 + 133 = iágię *hence*; ia- + 141.1 + 134.1 = iáhaų *hither*; ia- + 141.2 = iára *there*; ia- + 141.3 = iágota *over there*; ia- + 141.4 = iagóra *away yonder*. It is not clear whether the non-demonstrative (n)ieį ~ (n)iaį *there* is simple, or if it contains the suffix 142; at all events it may be followed by 133 or by 134.1 (the latter in the special alternant -hę).

The pronominal locators indicate both person and position (or direction) in space or in time. The pronominal bases are: nu-, bu-, li-, tu-, ua-, hu-, ha-; unlike the person-marker prefixes, each contains a stable vowel, that of the third persons singular differing with gender (li-, tu-). Third person bases may be inflected by any of the six suffixes of sub-class 141; all pronominal bases may be inflected by 141.6. The suffixes 133, 134.1, and 142 do not occur with the pronominal locators. Examples are li- + 141.1 = líha ~ lèa *he here*, or *masculine-this*, (alternation in this and in the following pronominal locators showing ceremonial and colloquial usage respectively); tu- + 141.1 = túha ~ tùa *she here*, or *feminine-this*; ha- + 141.1 = haha ~ ha *they here*, or *these* (animate); li- + 141.2 = líra *he there*, or *masculine-that*; ha- + 141.3 = há-

gota *they over there*, or *those over there* (animate); tu- + 141.4 = tugúra *she away yonder*, or *feminine-yon*; li- + 141.5 = líte *he coming*, or *the masculine-coming*; nu- + 141.6 = nugúia *it is I*, or *as for me*; li- + 141.6 = ligía *it is he/it/this/then*, or *as for him*, etc.

The predicative-pronominal locators indicate the presence of a being or object(s) or of beings in a particular situation, and are equivalent to such English phrases as *here is, there are, here comes, yonder go*, etc. The morpheme $\sqrt{\text{N}}$- combines with the person-marker suffixes (159) to form the following predicative-pronominal bases: anná-, abú-, iní-, unú-, ą́uá-, onó-, aniá- ~ ą́iá-, stress being always as indicated whatever the suffix that follows. It should be noted that, in the first and third persons singular and in the second person plural, older people and more conservative speakers generally employ syllabic n̥- (instead of Vn-) as word-initial. These bases are inflected by any one of the suffixes 141.1–141.5, the first two of which may or may not be followed by the non-demonstrative suffix, 142. The directional suffixes (133, 134.1) do not occur with the predicative-pronominal locators, but at least some of the latter may take (after 142 where present) one of the polyvalent suffixes (particularly 161.2 or 161.6). Examples are iní- + 141.1 = iníha *here he is*, or *he is here*; unú- + 141.2 = unúra *there she is*, or *she is there*; aniá- + 141.4 = aniágora *yonder they are/go*, or *they are/go yonder*; iní- + 141.5 = iníte *here he comes*—or rather, since these forms are always followed by a noun in cross reference with the person-marker of the base, *here comes* (with masculine cross-referent). Predications of existence or occurrence (our *there is, there are*) are made by a predicative-pronominal locator consisting of a third person base followed by either 141.1 or 141.2 and the non-demonstrative suffix 142; so iní- + 141.2 + 142 = iníraj *there is or there are* (in reference to inanimate objects of masculine gender), as well as *he/it is there* (non-demonstrative).

Non-thematic verbs may be derived from locators by addition of the sequence 157–159.

2.5. All verbs are derived primary or secondary words.

2.5.1. The minimum sequence constituting a thematic verb is 22 + STEM + 151. The stem may be a simple, derived, or compound adjective or noun, or it may be a bound form. For example, 22 + so *ardent* + 151.5 = ásoha *to sting*, 22 + máina *manioc-field* + 151.5 = amáinaha *to work in or cultivate the manioc-field*, 22 + (11 + íliru *captured game* = gáliru *having captured game*, a denominal adjective) + 151.5 = agáliruha *to hunt with dogs but no gun*, 22 + (díli *cold* + 113 = dilíga *cold in general*, a derived adjective) + 151.3 = adíligada *to become cold*, 22 + (iąúa *bad* + 131.4 = iąúari *troubles or disorders*, a de-adjectival noun) + 151.5 = aiąúariha *to meddle, to cause trouble or disturbance*, 22 + (dere *hard* + gubu *fully charged* = derégubu *recovered, convalescent*, a compound adjective) + 151.3 = edéregubùda *to recover health*,[8] 22 + -rai- *safe* (compare 21 + -rai- + 131.1 = iráini *safety, well-being*) + 151.3 = aráida *to keep (retain possession of), to put in order or security*.

However, the thematic prefix (22) may be absorbed by stem-initial vowel, and the thematic suffix (151) may be reduced by stem-final; so 22 + áhą *yes, agreed* + 151.8 = áhara *to agree*, and 22 + dahi *hooking onto* + 151.5 = adáhi(h)a *to hook or catch onto*. In this last example, parenthetic (h) may or may not be pronounced, but there are other thematic verbs without trace of

[8] Other verbs containing compound stems are 22 + dere *hard or firm* + ígira *to leave* = edérigira *to give up or to surrender*; 22 + eméni *withdrawal, shrinking from* (a noun) + ígira *to leave* = eménigira *to hope*, or, as a noun, eménigirao *hope*; see also footnote 5.

a consonant belonging to 151; so 22 + húia *rain* = áhuia *to rain, to pour down*; 22 + mirá *stabbing* = ímira *to stab*; 22 + gudá *burnt* or *burning* = águda *to burn*; and yet others in which neither thematic affix is "detachable", as in the case of ágaua *to bathe*, agánaua *to dwell*, aríha *to see or look*. We have therefore set up as ninth thematic suffix -a ~ zero (151.9, not shown in the foregoing examples), since, as with all other members of 151 except 151.5, (and with 152.1, 152.2, and 154), the vowelless alternant occurs always and only before 153, 155, or 156. So 22 + -agau- *bathe* + 151.9 + 155 = ágauni *bathing or bath*, 22 + -arih- *see* + 151.9 + 156 = aríhua *to be seen*, 22 + so *ardent* + 151.8 + 156 = ásorua *to be roasted*, (but 22 + so + 151.5 + 156 = ásohaua *to be stung*). Unlike passive verbs, which always have an active counterpart (aríha *to see*, aríhua *to be seen*), middle-voice verbs have only one form in this respect; so 22 + (11 + águ *eyes* = gágu *having eyes*) + 151.3 + 153 = agágudua *to awaken*, 22 + -ebec- *criticize or pick on* + 151.9 + 153 = ébecua *to criticize or to pick on*, 22 + -aiah- + 151.9 + 153 = aiáhua *to weep*, 22 + -afag- + 151.9 + 153 = áfagua *to strive or struggle*, although this last example may possibly be related to áfara *to beat* or *to kill*.

2.5.2. Of the secondary thematic suffixes, the tensive -ha (152.3) and the stative -gua (152.2 + 153) are common, -ba (152.1) and others are rare. However, two examples of -ba will indicate its significance; (22 + -bu- *at or under* + 151.7 = ábuna *to bury or to plant*) + 152.1 = ábunaba *to build*; (22 + -au- *concerning, by means of* + 151.7 = áuna *to heed*) + 152.1 = áunaba *to answer*.

Except when followed by 153, the significance of 152.2 is not clear; so (22 + ca *thrust* + 151.8 = ácara *to thrust*) + 152.2 = ácaraga *to stop* (*up*) or *to pack* (*into*), and (obsolete) *to spin*. Together with 153, this suffix goes to form stative verbs, which differ from those of the middle voice in always having another thematic verb as underlying form.[9] As far as meaning is concerned, the complex formative 152.2 + 153 is identical with 112.1, since many stative verbs are derived from stative adjectives, as in the case of agúmucagua *to come to an end, to vanish*, from gumúgua *at an end*, with which compare agúmuca *to end*, from gumú *finished* (non-stative). But this is not invariably so; gemégua *sparkling* yields no thematic verb, and aráidagua *to get well* has no such stative adjective as *raigua, but only the thematic verb aráida *to keep safe* as its underlying form. This difference in distribution would appear to justify the different treatment that has been accorded the two stative formatives -gua (112.1, and 152.2 + 153). Other examples of stative verbs are áta (= 22 + -at- + 151.9) *to drink* + 152.2 + 153 = átagua *to be or go on a drinking-bout*, aríha *to see or look* + 152.2 + 153 = aríagua *to watch*, ábuna *to bury or to plant* + 152.2 + 153 = ábunagua *to plant*.

The remaining listed member of the second order of thematic suffixes, -ha (152.3), has been called tensive because it usually modifies the meaning of the verb to which it is added either in an extensive or in an intensive direction; so, in águda, águdaha *to burn*, and ásora, ásoraha *to roast or bake*, the forms with -ha would be employed in reference to extensive or habitual operations such as burning the land before planting, or the professional activities of a baker; in áta, átaha *to drink*, the first word refers to an act, the second to a habit. On the other hand, this suffix might be called intensive in ábunaha *to bury*, from ábuna *to plant or to bury*; adíaha *to fish*, from adíga *to catch or hook up*; aríaha *to peer*, from aríha *to see or to look*. In certain cases the change of meaning is so great as to appear arbitrary; so áunaha *to send* (transitive), from áuna

[9] Most stative and middle-voice verbs are intransitive; however, adúragua is transitive with the meaning *to stoke, poke, make up* (*fire*), intransitive when it means *to meet* (*with somebody*). Similarly (contrary to what I said in IJAL 17.23–31), while ébecua *to criticize* (*adversely*) is transitive in all its occurrences in my data.

to heed; compare also intransitive áunagoda *to send (for)*, and transitive áunaba *to answer*. Verbs bearing the tensive suffix are transitive or intransitive. As in the case of 151.5, 152.3 retains its vowel when followed by passive -ua (156); so áluga *to seek* (single act) > áluaha *to look for* (tensive) > áluahaua *to be looked for*.

2.5.3. Mediostative -ua (153) occurs in this position only after the stative suffix (152.2) in the formation of stative verbs; as a middle-voice formative, it occurs only after suffixes of 151. These two functions are mutually exclusive; there is no such thing as a stative middle-voice verb. So 22 + -rai- + 151.3 + 152.2 + 153 = aráidagua *to get well* is stative, and 22 + -aiah- + 151.9 + 153 + 152.3 = aiáhuaha *to weep* is tensive middle-voice. Such a verb as 22 + -aig- + 153 + 152 = áiguada *to fall* is not stative but middle-voice, and the only example in my data of -da (152, not listed) as a secondary thematic suffix. This latter is occasionally omitted, in which case áigua *to fall* must be considered as a homonym of áigua (22 + -aig- + 151.9 + 156) *to be eaten*. The mediostative suffix (153) differs from the homophonous passive (156) not only in distribution, but also in having a zero-alternant which occurs before the participial suffix (155); so 33 + 22 + -rai- *safe* + 151.3 + 152.2 + 153 + 155 + 157.1 = laráidaguba *he'll get well*, 22 + -aiah- *weep* + 151.9 + 153 + 155 = aiáhuni *weeping*.

2.5.4. The causative suffix -goda (154) occurs after 153 (or earlier); as in aráidagua *to get well* + 154 = aráidaguagoda *to make well*, ígira *to leave* + 154 = ígiragoda *to let go of*. Most causative verbs are transitive, but (as has been seen above) the anomalous áuna *to heed* + 154 = áunagoda *to send (for)* is intransitive.

2.5.5. The participial suffix (155) occurs in two alternants, -UnE and -U, each of which has several shapes. The former occurs whenever it is followed by a word-final suffix other than an aspect-marker (157), or whenever it is itself word-final in a participle having the thematic prefix (22) as word-initial; the latter occurs in all other environments.

Basically, U = /u/ since this form is said to be always "correct", (although it is very unusual under certain conditions). Normally, U = /u/ ~ /o/ ~ /i/ after a consonant, and is absorbed (reduced to zero) by a preceding vowel; /o/ or /i/ replacing /u/ when the last preceding (and/or next following) vowel is /o/ or /i/ respectively, and the intervening consonant not a labial. Optionally, U may equal zero when it is followed by 157.2 and preceded by a consonant other than /b/, /m/, /r/, or /t/. Otherwise, U = /u/ in practice as well as in theory. E, when word-final or when followed by a suffix with initial consonant, is usually heard as /i/. However, -UnE + -(u)ga (113) = -Unauga; and as the parenthetic vowel of the latter suffix is actualized only after /a/ or /e/ (which it changes to /a/), E = /e/ in this case at least. Before 156, and before suffixes of 159 that have initial vowel, E = zero. Examples are 33 + 22 + -ebec- + 151.9 + 153 + 155 + 159.1 = lébecunina *his picking on me*, 22 + -aganau- *dwell* + 151.9 + 155 + 157.5 + 159.3 = agánauti *he dwells*, or *masculine dweller* (a "de-thematic" aorist verb and agentive), 34 + 22 + so *ardent* + 151.5 + 155 = tásoha *her stinging*, 34 + 22 + -adog- *do or make* + 151.9 + 155 + 159.3 = tadógoni *her doing it*, 33 + 22 + -igir- *leave* + 151.9 + 154 + 155 + 156 = lígiragòdonúa *his or its being let go of*, 34 + 22 + -rai- *safe* + 151.3 + 152.2 + 153 + 154 + 155 + 156 = taráidaguagodonúa *her being made well*, 33 + 22 + doró *thundering* + 151.5 + 155 + 113 = ladórohanáuga *its thundering* (general), 22 + so *ardent* + 151.5 + 155 = ásohani *stinging*, 22 + -aig- *eat* + 151.9 + 155 = áigini *food, eating, a meal*, 31 + 22 + -aig- + 151.9 + 155 = náigi *my food*, etc., 31 + 22 +

-aig- + 151.9 + 155 + 157.1 = náiguba *I'll eat*, 22 + -rai- + 151.3 + 152.2 + 153 + 154 + 155 + 157.1 + 158.2 + 159.3 = aráidaguagòdobáli *that made him well* (subordinate verb, and longest sequence recorded).

2.5.6. The passive suffix -ua ~ -u (156) appears as the alternant -u when it is preceded by the participial (155), and is not itself word-final. So far as I know, this happens in only two constructions, the future passive, and the passive aorist-agentive; so 33 + 22 + -afar- *beat* + 151.9 + 155 + 156 + 157.1 = lafarúuba *he'll be beaten*, (contrast 33 + 22 + -afar- + 151.9 + 155 + 157.1 = láfaruba *he'll beat*); and 22 + -afar- + 151.9 + 155 + 156 + 157.5 + 159.3 = afarúuti *he who is beaten*, (contrast 22 + -afar- + 151.9 + 155 + 157.5 + 159.3 = áfaruti *masculine beater*).[10] The alternant -ua appears in all other environments; so 22 + -afar- + 151.9 + 156 = áfarua *to be beaten*, 22 + -afar- + 151.9 + 156 + 157.5 + 159.1 = áfaruátina *I am beaten*, (a de-thematic verb); 33 + 22 + -afar- 151.9 + 155 + 156 = láfarunùa *his being beaten*, (passive participle).

2.5.7. The remaining verbal and verbalizing suffixes have been described elsewhere;[11] the only changes I should wish to make here being to remove -t(i) and -n(i) from the list of "copulas", to add the former to the aspect-markers (as 157.5), and to combine the latter, as has been done in this paper, with the participial suffix (155) described above.

[10] Contrary to my previous statement in IJAL 17.224–34, it would appear that geminate vowel-clusters may occur across morpheme boundaries when accented, the only other example I can find being 31 + hu *hoe* + -te = núute *my hoe*; but 22 + -agau- + 151.9 + 155 = ágauni *bathing*, and 22 + -aganau- + 151.9 + 155 + 157.5 + 159.3 = agánauti *he dwells*, or *he who dwells*.

[11] See IJAL 17.23–31.

2.5.8. Also the auxiliary verbs have been described already,[11] so that only a brief summary of their structure need be given here. With the exception of the conditional, hamúga (almost certainly a complex form, albeit synchronically unanalysable), the sequence 30 + BASE constitutes the minimum auxiliary verb, 30 + BASE + 157.4 + 158 + 159 the maximum elaboration. Morphologically at least, three of the six offer no difficulty; these are: the imperfective (with future tense and subordinate functions), 30 + -ba- ± (158 + 159); the progressive, 30 + -ią- ± (158 + 159); and the proximate future, 30 + -iabu. The aorist might be analysed as 30 + -mu- + 157.5 ± 159, (compare uáinamu *grown up*, from uái *old*, and hamúga, the conditional auxiliary); but unless and until this morpheme (*-mu-) can be isolated and its function made clear, it seems safer to write 30 + -mutI- ± 159. On the other hand, the base -a- ~ -ma- (the first alternant appearing after 31–34, the second after 35–37) serves four different auxiliaries: 30 + -a/ma- ± 159 is the conjunctive (with imperative and subjunctive functions); 30 + -a/ma- + 155 ± 159 is the participial auxiliary; 30 + -a/ma- ± (158 + 159) is the perfective; and 30 + -a/ma- + 157.4 + 158 + 159 is the durative (*still*). This same base combines, moreover, with the conditional (which otherwise occurs as hamúga ± 159) to form the desiderative as 30 + -a/ma- + (ha)muga ± 159, in which (ha) is usually lost. As it is hardly possible to translate these auxiliaries in isolation, the following will be used in the examples as complements and goal: áfara *to beat*, áuca *to try*, garáuaụ *drum*. Examples: áfara nubádibu (31 + -ba- + 158.1 + 159.2) *I'll beat thee*, áfara niądibu (31 + -ią- + 158.1 + 159.2) *mind lest I beat thee*, áfara nią (31 + -ią) garáuaụ *I beat the drum* (statement of an accomplishment), áuca niábu (31 + -iabu) áfarabu *I'm going to try to beat thee*, áfara numútibu (31 + -mutI- + 159.2) *I (did or do) beat*

thee, áfara uamútibu (35 + -mutI- + 159.2) hamúga *we should beat thee*, áfara uamábu (35 + -ma- + 159.2) *let us beat thee* (imperative), áfara uamámugabu (35 + -ma- + hamúga + 159.2) *would that we might beat thee*, áfara nánebu (31 + -a- + 155 + 159.2) *my beating thee*, (this construction is said to be synonymous with synthetic 31 + 22 + -afar- + 151.9 + 155 + 159.2 = náfaruníbu), áfara nádibu (31 + -a- + 158.1 + 159.2) *I have beaten thee*, áfara nádibu hamúga *I should have beaten thee*, áfara nágidibu (31 + -a- + 157.4 + 158.1 + 159.2) *I still beat thee*.

Auxiliary verbs cannot take polyvalent suffixes.

2.5.9. A non-thematic verb is a derived secondary word whose underlying form is a thematic verb, a locator, a noun, an adjective or other particle. The minimum sequence constituting a non-thematic verb is UNDERLYING FORM +157, and the maximum elaboration UNDERLYING FORM + 157 + 158 + 159, (except that a polyvalent suffix of 160, not ordinarily occurring with an underlying thematic verb, may be inserted before 157). In this way, almost any word except auxiliary verbs and interjections may yield a non-thematic verb, unless it be already closed by this same sequence (157–159) or by part of it, or, it would appear from my data, by the word-final form of 155 + 156 (-Unua), and possibly one or two other suffixes.

Non-thematic verbs, unlike thematic verbs and all but one (-iabu) auxiliary, cannot include a pronominal goal; the person-marker suffix (159), where one is present, indicating the pronominal subject. Pronominal prefixes occurring in non-thematic verbs belong to the underlying form, as in númari (31 + úmari) *my spouse* + 157.4 + 158.1 + 159.2 = númarigidíbu *thou'rt still my spouse*. It should be noted that all verbs bearing the perfective, durative, or aorist aspect-marker (157.3–157.5) are non-thematic (including de-thematic verbs), those bearing the imperfective (157.1) or the progressive (157.2) marker are thematic or non-thematic, while those bearing thematic affixes but no aspect-marker (157) are thematic verbs of "indefinitive" aspect. So 31 + 22 + -arih- *see* + 151.9 + 161.5 + 157.1 + 158.1 + 159.2 = naríhamemébadìbu *I'll go on seeing thee* is thematic, whereas aríhameme *to continue to see* + 157.4 + 158.1 + 159.1 = aríhamemégedìna *I still continue to see* is non-thematic, or rather de-thematic. But if a thematic verb is itself a secondary word, the non-thematic aspects are formed on the underlying form, and not on the thematic verbal derivative. This is clear in the case of ásura *to finish*; so 32 + 22 + sụ́ *every or all* + 151.8 + 155 + 157.2 = básurụ́ią *thou'rt finishing*, but sụ́ + 157.3 + 158.1 + 159.2 = sụ́hadibu *thou hast finished*; or in that of 22 + bau *brittle* + 151.2 + 152.2 + 153 = abáucagua *to get broken*, but báugua *stative broken* (adjective) + 157.5 + 159.3 = báuguati *it is broken*, (which again illustrates the semantic identity of 112.1 with 152.2 + 153).

Except for the prohibitive complement of the conjunctive auxiliary, which consists of 12 + 22 + STEM + 151, all verbs having class 10 prefixes as word-initial are non-thematic; and have attributive or privative adjectives (including the habilitative and inhabilitative type derived from thematic verbs) or participles as their underlying forms. Thus compare 31 + 22 + -afar- + 151.9 = náfara *I beat* (indefinitive) with 12 + 22 + -afar- + 151.9 + 155 + 157.5 + 159.1 = máfarutina *I don't beat*, the first thematic, the second aorist and non-thematic; or 22 + -afar- + 151.9 + 157.3 + 158.1 + 159.1 = áfarahádina *I have beaten* with 12 + 22 + -afar- + 151.9 + 155 + 157.3 + 158.1 + 159.1 = máfaruhádina *I have not beaten*, both non-thematic, and with the underlying forms áfara *to beat* and máfaru *not beating* respectively. So also, siạ́

unable or impossible + 157.5 + 159.1 = siątina *I am unable*, but 12 + 22 + sią + 151.8 + 155 + 157.5 + 159.1 = másiąrutina *I am not unable*, with másiąru *not being unable*, the negative participle of ásiąra *to be unable*, as underlying form. A privative adjective, when one can be formed, may serve just as well as a negative participle in the formation of a negative verb; so mabusę (privative denominal adjective from the loanword busuę *want or need*, French besoin) + 157.5 + 159.1 = mabusętina *I don't want*, as well as mabúseru (privative participle of thematic abúsera *to want*) + 157.5 + 159.1 = mabúserutìna *I am/was not wanting*, the difference between the meanings of the two forms being no greater than that of the translations. The former type is not possible in the case of an adjective such as sią, which, not being susceptible of nominalization by the prefix 21, cannot take the privative 12.

Non-thematic verbs may be employed in conjunction with auxiliaries as in áburigahádina (*I have arrived* = áburiga *to land or arrive* + 157.3 + 158.1 + 159.1) hamúga *I'd have arrived*.

2.6. Only three of the polyvalent suffixes occur in thematic verbs; these are: -ia (161.2, repetitive), -meme (161.5, continuative), and -rao (161.3, diminutive). In this function, they replace the participial suffix (155) in positions where it occurs in their absence; compare 31 + 22 + -arih- *see* + 151.9 + 161.2 + 157.1 + 158.1 + 159.2 = narîhaiabádibu *I'll see thee again*, and (replacing 161.2 by 161.5 or by 161.3) narîhamemébadìbu *I'll continue to see thee*, narîharaobádibu *I'll see thee a little*, with 31 + 22 + -arih- + 151.9 + 155 + 157.1 + 158.1 + 159.2 = narîhubadibu *I'll see thee*. Since the U-element of 155 is reduced to zero when it follows a vowel (see **2.5.5**, and the participial auxiliary under **2.5.8**), this might be explained as another case of absorption, were it not that elsewhere the polyvalent suffixes follow 155 or 156; and, as has been seen, the vowelless alternants of 151 occur before 153, 155, or 156. So 12 + 22 + -icig- *bring or give* + 151.9 + 155 + 161.2 = míciguia *not giving more, not giving again*, 34 + 22 + -arih- 151.9 + 156 + 161.2 = tarîhuaia *she is/was seen again*, or in a non-thematic verb derived therefrom such as míciguia + 157.1 + 158.1 + 159.1 = míciguiabadina *I'll not give more/again*.[12]

As in the last example, the repetitive morpheme may have more than one English meaning, such as *again, also, more, moreover, before, already*. Another example is 22 + -agąb- *hear* + 151.9 + 152.3 + 161.2 + 157.3 + 158.1 + 159.1 = agábahaiahádina (buágu) *I've already heard* (*about thee*). The repetitive suffix occurs with adjectives, as in bacárua *drunk* + 161.2 = bacáruaia *drunk again*; with locators, as in iníha *here he is* + 161.2 = iníhaia *here he is again*; and, of course, with the verbal derivatives of these. The same is true of the continuative; so bacáruameme *drunk all the time*, iníhameme *he continues to be here*. The continuative (and probably the repetitive) may also occur with nouns, as in uogórią (uogóri *man* + 159.7 as pluralizer) *men* + 161.5 = uogóriąmemè *men all the time—nothing but men*. The diminutive occurs with verbs (see above), but is commonest with nouns, as in 34 + iráho *little one or child* + 161.3 = tiráorao *her little child*; and was recorded in only one adjective, niórao *tiny*, where it is today in all probability a primary suffix; cf. (n)iǫ- + 157.4 + 158.2 + 159.3/4 = iǫgili/iǫgiru *he/she is still little* (of a child). The diminutive is employed less by men than by women, who sometimes tack it on to the stative particle gia, as in reply to the formal enquiry *how are you?*—úati giárao-ti *there's nothing* (*wrong*).

161.6 is always word-final, and probably enclitic, as with the locator iníraį-giua *he's still there*.

[12] Exceptionally, both 156 and 161.2 may occur as stem-formative in a thematic verb; so 22 + cauaia + 151.8 = acáuaiara *to pull again*, has ca *thrust* + 156 + 161.2 as stem.

The conclusive (161.1), gubái *altogether, all, at once, completely*, etc., and the restrictive (161.4), rogo ~ rog- *only, just*, etc. occur as free adverbial particles, and yield non-thematic verbs. They also form a compound, gubáirogo *after all (in spite of all that has happened or been said)*. Since, moreover, phrase-formatives occur in this language (cf. tíbiri *her younger brother* followed by búgucuruią́dina *I am thy mother = I am thy mother's younger brother*), it is not clear whether the following examples are correct, or whether they should be written as phrases: sų *every or all* + 161.1 = sų́gubài *all (of a number of distinct entities)*, órua *three* + 161.1 = óruagubài *all three (of them)*, maríe *married* + 161.1 = maríegubài *married right away*, 31 + águiu *return, homecoming* (a noun) + 161.1 + 157.1 = náguiugubáiba *will be my definite homecoming*, sią *impossible* + 161.4 = sią́rogo *just impossible*, 33 + -bára- ~ -ba- *for or before* + 161.4 = lubárogo *only for it (only because of it)*, órua + 161.4 + 157.2 + 159.3 = óruarogoią́i *it is only three*, 31 + 22 + -eręg- *say or tell* + 151.9 + 155 + 161.4 + 157.2 + 159.3 = nerégurogǫią́i *it is only my telling*, ába *one* + 161.4 + 157.3 + 158.2 + 159.3 = ábarogáli *it has become only one*, maní *silent or quiet* + 161.4 + 157.3 + 158.2 + 159.4 = manírogarù *she just became quiet/silent.*

UNAALIQ AND PROTO ESKIMO IV: DIACHRONIC NOTES*

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7. Historical phonology
7.1. Main developments
7.2. Initial and final consonants
7.3. Consonant groups
7.4. Vowel groups
7.5. Vowel-consonant sequences
7.6. Proto Eskimo alternations

7. Much of the historical phonology of Unaaliq is reflected in the morphologic interchanges of sounds as they are brought together in the suffixation process. However, it is impossible for a living phonologic interchange to preserve intact the response to past phonetic conditions. In fact, there are some contradictions in the phonological rules showing that they go back to different time periods. For example, t coming into contact with k gives either tk or sk or nk depending on what kind of elements are involved. We may infer that the change to sk, being most drastic, is the most archaic. But at last analysis we cannot expect all problems to be solved in this manner, and have to base our reconstruction on the comparative data of the various dialects. This approach also has the advantage that it implies a definite time depth. What Unaaliq has in common only with Kuskokwim and Nunivak is recent; what it also has in common with Siberia goes back to the common Yupik period; what it has in common with Inupik goes back to the common Eskimo period. Disregarding then the morphologic interchanges of sound, except insofar as they are also confirmed by other evidence, we determine to the extent possible the phonetic structure of Yupik, Inupik and Proto Eskimo.

7.1. The relation of the Yupik and Inupik phonemic systems to each other and to that of Proto Eskimo may be shown in the following parallel tables:

Yupik				Proto Eskimo				Inupik			
p	f	v	m	p		v	m	p	v	m	
		u				u			u		
		a				a			a		
						ə			ə		
		i				i			i		
c	ʃ	j			s	j	n	s	j		
t	ɬ	l	n	t	ɬ	l	n	t	l	n	
k	x	ɣ	ŋ	k		ɣ	ŋ	k	ɣ	ŋ	
q	χ	ʀ		q		ʀ		q	ʀ		

Since there are many instances of a i u found in corresponding places in cognates in all the dialects, we assume that these vowels go back to Proto Eskimo. In addition we infer the former existence of a mid central vowel phoneme, ə, which no longer exists as a separate phoneme in any of the modern dialects. A Yupik final a corresponding to final i of the Inupik dialects must be based on this original, for example, UNKS tuma, WBMG tumi *road*, from P tumə. Similarly initial i of the Inupik dialects corresponding to zero in Yupik has this origin, e.g. N miχ, UKS miq, WBMG imiq *water*, from P əmiʀ. Such instances contrast with others in which all the dialects have initial i, e.g. US imaq, WBMG imaq *sea*, from P imaʀ. Moreover, our assumption is corroborated by the fact that s appears for t in Barrow and Greenland after i where this vowel corresponds to retained initial i of Yupik but t remains after an i which corresponds to zero in Yupik, e.g. N tiχ, US tiq, WBMG itiq *anus*, from P ətiq, as against UKS itiɣaq, WM itiɣaq, BG isiɣaq *foot*, from P itiɣaʀ. In other words Proto Eskimo i had an assibilating effect on t but ə, like u and a, did not. Criteria for reconstructing ə are therefore the a to i relation in final position, disappearance in initial position, non-assibilation of following t.

* For Unaaliq and Proto Eskimo I, II, III see IJAL 17.66–70, 18.25–34 and 69–76.

In addition, we can reconstruct ə wherever any dialect has i subject to the phonologic interchanges of the ĭ morpho-phoneme. It does not follow from the foregoing that every zero to i correspondence between Yupik and Inupik implies an original central vowel, because i was evidently also lost under certain circumstances. This is seen in the relationship NK staamat, U ctaamat, S stamat, WM sitamat, BG sisamat *four*, from P sitamat, with i and not ə as proved by the assibilation of t in BG. Perhaps it is between dentals in open initial syllables that i is lost, a phenomenon related to the loss of a between velars in a case like US χuq, N χuχ, B qaqʀuq, M qaʀjuq *arrow*, from P qaʀjuʀ.

Very important for chronology is the fact that the assibilation of t after i is confined to Barrow and Greenland, while Wales and Mackenzie retain the consonant intact. This means that the process took place after the common period of Inupik. By the same token it is proved that the phonemic distinction between i and ə was maintained in Inupik throughout the common period of this branch. As for Yupik, there is no compelling evidence to prove the existence of the contrast to the end of the common period. So far as our present understanding of the evidence goes, we have no reason to assume a separate ə phoneme in the late common Yupik period reconstructed from the present dialects. However the active interchanges of the morpho-phoneme ĭ, based upon original ə phoneme, proves that this phoneme still remained in early Yupik after its separation from Inupik.

Except for the vowel i, Barrow and Mackenzie and most local varieties of Greenlandic have the same list of phonemes as proto Inupik. Early Greenlandic developed a new consonant, ʃ, out of j in certain positions. This phoneme was reported by Kleinschmidt in South Greenlandic in his time but today it is still found only in the Thule district. In the other local subdialects ʃ has moved on to s, coinciding with archaic s, so that the final list of phonemes agrees once more with the archaic Inupik consonants. In Wales intervocalic p k q s were spirantized and voiced to v γ ʀ z. Original v and in some positions also γ are vocalized to u. The new γ and ʀ fall together with the archaic phonemes, the new v has moved into the place vacated by original v, but z constitutes a new phoneme added to the original system.

The Inupik consonant system agreed with Proto Eskimo in all but one feature, namely that voiceless ɬ had fallen together with voiced l. This eliminated the small basis that had existed of a threefold stop-spirant-continuant contrast. Since the s now alined essentially with the stops, this created the strong-weak contrast which characterizes Inupik.

The Yupik development was in the opposite direction. Instead of being ironed out, the spirant-continuant contrast was spread into all the consonant sets. The manner in which this came about is not altogether clear. Presumably the original continuants were devoiced in contact with stops and with s and ɬ, such devoiced sounds being at first merely positional variants and not independent phonemes. In initial position, clusters like kγ and qʀ were evidently simplified by the loss of the stop, and the devoiced continuants thereby came into contrast with initial voiced γʀ. Examples are Uxuutit *teeth* from earlier kγuutĭt from P kĭγuutĭt, and U χuq *arrow* from earlier qʀuʀ from qaʀuʀ from P qaʀjuʀ. Once the contrast developed in one position, this established the new phonemes, and many other instances of devoiced continuants came into the sphere of the voiceless spirants. It is true that clusters like kx are found today in initial position, e.g. derivatives of kĭγĭ- *to bite*. Such clusters are probably more recent than the change of kx to x, being newly formed from the root.

Proto Eskimo s may have developed into an affricate c (ts) in original Yupik, or more likely the fricative and affricate values may have fluctuated. At any rate this phoneme was distinct from the ʃ developed out of j

by devoicing in the same way that χ x f developed out of ʀ γ v. This original contrast remains in Unaaliq-Nunivak-Kuskokwim in the form of c versus s, and in at least one dialect of Siberia Eskimo in the contrast between s and ʃ. In other dialects of Siberia the two Yupik sounds have fallen together in s.

7.2. Proto Eskimo, like Inupik even today, had consonant clusters only in medial positions. Except for imitative words, initial consonants were limited to nasals m n, spirant s, and stops p t k q. These same initials are still found in all modern dialects except that Alaska Yupik has c instead of s. The final position also had only single consonants of a limited list, probably m n ŋ t γ ʀ. In Yupik γ ʀ evidently developed into x χ while in Inupik they changed to k q. The other finals remained in both Yupik and Inupik. Final x χ of Yupik have been retained as such only in Nunivak, but have become stops, k q, in Siberia and in Unaaliq-Kuskokwim. The Inupik finals were retained in WBM and in early Greenlandic, but modern dialects of Greenlandic have generalized either the stop, by changing m n ŋ to p t k, or the nasal, by changing t k q to n ŋ.

Final n has to be assumed for Proto Eskimo despite the fact that in the dialects final n changes to t when it becomes medial, e.g. javun *harpoon*, javuutit *harpoon*. The fact that this is found in all the dialects of both Inupik and Yupik makes it highly probable that the same interchange already existed in Proto Eskimo times. Since a contrast between final n and final t exists in all the dialects, we may infer that final t already existed in the common period. An explanation is needed for the fact that there are two morpho-phonemic entities both apparently having t as their primary form, but the origin of this morphologic contrast may antedate the latest common period of Inupik and Yupik. Thus, at a still earlier period the difference between interchanging t-n and plural t may have been one between continuant δ and stop t, paralleling the contrast of γ and k, ʀ and q. The contrast may have been ironed out in medial position but converted into an n/t contrast in final position. The general contrast of continuant with stop (γ/k, ʀ/q, v/p, δ/t) must itself go back to an ancient pre-Eskimo status of single versus double consonants (k/kk etc.).

The reconstruction of spirant γ ʀ in final position for Proto Eskimo despite the fact that almost all varieties of Eskimo today have stop in this position, is based upon compelling phonological considerations. In the phonology final k q are regularly replaced by γ ʀ, whenever a vowel follows and also before a nasal or continuant. In Yupik spirants are also found before stops, in which position they doubtless developed from devoiced continuants, e.g. K miq *water*, miʀun *drinking cup*, miχtuq *drinks*, stem miʀ- *water, drink*. Since intervocalic q exists in Eskimo, we cannot take the stop but necessarily the spirant as the primary form of the morphophoneme. This fact by itself would not prove that the continuant was still used in final position in the latest common Proto Eskimo period, but the fact that one variety of modern Eskimo, namely Nunivak, has final spirants (e.g. miχ *water*) makes it highly probable not only that Proto Eskimo still had continuants in word-final but that this characterized the Yupik branch throughout its common period, and even prevailed in Alaskan Yupik in its relatively recent common period. The conversion of Yupik final x χ to k q must have come about under the influence of Inupik, with Nunivak alone conserving the archaic form precisely because it had the least contact with Inupik.

7.3. In medial intervocalic position, Proto Eskimo, like all modern Eskimo dialects admitted the full gamut of single consonants and many two-element clusters. Like Inupik, it did not admit more than two consonants together.

Medial clusters to a considerable extent showed a relationship with the permitted initials and finals in that in general the most

common clusters were those whose first consonant was permitted in word final and whose second consonant corresponded with a permitted initial. However, all sorts of clusters occurred, including some neither of whose elements appeared in initial or final, as iłvit *thou*. The greatest variety of clusters were found between the first two vowels of the word, presumably as the result of losing an interconsonantal ə.

Of geminates we have evidence for nn mm γγ ʀʀ vv ll, among others, as in reconstructed P tunnuʀ *back fat*, tammaʀ- *lost*, siγγuγ *beak, horn*, nuʀʀaʀ *fawn*, sivvəjaʀ *hip*, nulliaq *wife*. In general the geminates were preserved as such in Inupik but simplified in Yupik, e.g. WBMG nuʀʀaq, N nuʀaχ, U nuʀaq *fawn*. In a case like U nulliaq, we find a geminate not based on the earlier Proto Eskimo form but as a result of a doubling process which took place in early Alaskan Yupik before vowel clusters whenever the consonant came after the first vowel of the word. This same process gave rise to geminates in all words that had an original vowel group or one formed by suffixation, e.g. U attauciq *one* from P atauciq (WBMG atausiq, S ataasiq), attii *his father* from ata-ja. Its active period had passed before the time of vowel doubling in words like UN ikuujik *elbow* from P ikusik (S ikujik, W iγuzik, BMG ikusik), which therefore have an ungeminated consonant. Of the Inupik dialects, Greenlandic evidently simplified original geminates in positions other than between two simple vowels of the first two syllables; thus we find G nauliγaq to B naulliγaq *harpoon* and G nuliaq to BM nulliaq *wife*. The formation of new geminates by the collocation of like consonants continues to be an active process in Inupik, e.g. BM tikittuq *arrives* from tikitī-tuq. And new geminates were formed by assimilation of mixed groups in the several dialects, e.g. N aɬɬa, WBM alla, G avla *another*, from P avɬa; WB allu, CG aγlu, S aŋlu *ice-hole*, from P aŋlu.

Of mixed clusters, all possible general types were represented in Proto Eskimo but there seem to have been various specific limitations. Stop-stop clusters were the most limited, evidently having been confined to tk and tq. Other known instances of preconsonantic stop are tl pʀ qv qj kj pj km, in other words stop preceding spirant, continuant or nasal. Spirant s did not occur before other consonants but ɬ did, e.g. P iłvit *thou*, miłquʀ *fur*. In second position s was also rare, with only vs found so far, e.g. P tavsi *belt* (U tafcik, N tafsi, G tavsi, W tapsiq, BM tapsi). Collocation of a palatal and a velar consonant in the same cluster was not admitted except for nasal plus stop (ŋq).

The principal change affecting consonant groups in Inupik was the conversion of nasals m n ŋ to continuants v t γ before non-nasals, for example P iŋlu, S niŋlu (amalgamation with ənə-*lodging*), WBMG iγlu *house, winter house*. Similarly ɬ before a cluster changed to t in Inupik, as P miłquʀ, N miłquχ, WBM mitquq, G miʀquq *fur*. Continuants v ʀ following stops were converted into stops: P tapʀaʀ, N tapχaχ, S tapχaq, G tavqaq *rope*; P aqvaγ-, UN aqfaʀuʀ-, S aχpaati-, WBM aqpaγ-, G aʀpaγ- *run*. Proto Eskimo continuants v γ ʀ evidently became Inupik stops when occurring as the first element of original clusters unless the second element was l j m n or ŋ. Such Inupik stops were subsequently reconverted into continuants in Greenlandic, along with any other similarly placed stops. Thus, original ʀ appears as q in WBM but as ʀ in Greenlandic before v in P aʀviniʀ-UNKS aʀviniłγit, WM aqviniłγit, G aʀviniq *six*; similarly in the group ʀt of P taʀtu, UN taχtu, WBM taqtu, G taʀtu *kidney*. WBM ql derived from original ʀɬ contrasts with original ʀl: WBM tuqlu *throat* from P tuʀɬu (N tuχɬu, G tuʀluk), as against W uʀlai-, G uʀlīʀ- *aim* from P uʀlə- (N uʀluʀaχ *bow*). In clusters before nasals, original m n ŋ were preserved. Furthermore stops p t k and spirants v γ were changed to homorganic nasals before another nasal, e.g. G qiŋmiq, BM qimmiq, S qikmiq *dog*.

Inupik clusters were modified in the various Inupik dialects by assimilation of the first to the second element, as seen in examples already cited. Besides this Greenlandic underwent transposition of clusters in certain cases, e.g. maʀluk *two* for P malʀuγ (UKS WBM malʀuk, N malʀux).

In Yupik the original Eskimo clusters were modified by the change of continuants into spirants in contact with stop or c from original s, of continuants into stop after ɬ, and of stop t into spirant s in the stop-stop clusters tk and tq. The result of these changes converged to produce clusters of a stop and a spirant in either order. Thus, as already illustrated, were produced χt from ʀt, qf from qv, ɬp from ɬv, sq from tq. Before ɬ a continuant was spirantized, producing χɬ from ʀɬ and by assimilation ɬɬ from vɬ (e.g. avɬa). Except for positional assimilation in certain cases in the dialects, the other kinds of clusters, as nasal-nasal, continuant-nasal, nasal-continuant, and others, were maintained in their original forms. Siberia has some examples of what appears to be untypical developments in consonant clusters, e.g. ukpik *snow owl* for U uŋpik; such cases are due to borrowing from Wales.

In addition to original clusters and their derivatives, Yupik developed a great many new clusters by the loss of interconsonantal ə and occasionally of other vowels. The only adjustment made in the clusters is the changing of continuants to spirants in contact with stops or spirants.

7.4. Three of the original Eskimo vowels, i a u, normally remain intact in all the modern dialects. Some of the clusters made up of these vowels were modified in one or another dialect. Siberia, for example, changes au to aa in ataasiq *one* and saajaq *drum* for P atausiq, saujaq; Original simple i a u were doubled in Alaskan Yupik after the first non-initial consonant of the word if they occurred in an open non-final syllable and if any preceding syllable were also open, e.g. U avaataq corresponding with G avataq *bladder float*; UN ikuujik, S ikujik, W iγusik, BMG ikusik *elbow*; UK ctaamat, N staamat, S stamat, BG sisamat, WM sitamat *four*. This process was relatively recent, postdating the doubling of consonants before two-vowel groups.

The fourth Proto Eskimo vowel, ə, changed to i in all simple occurrences in Inupik. It generally changed to i in Yupik also, but in word-final it became a. In many interconsonantic positions it was lost entirely. The development of ə in clusters is difficult to trace for scarcity of proved specific instances of such clusters in Proto Eskimo. Original uə and aə seem to be involved in: UKS kuik, N kuix, BMG kuuk *river*, from P kuəγ, related to kuvə- *to flow*; UNS qaiŋ-, BM qaaŋ- *surface*, from P qaəŋ-; UN paiχtī-, WBG paaʀ- *meet*, from P paəʀ-. The morphophonemic rule that ī plus i gives ai both in Yupik and Inupik suggests that əi did not occur in the latest common period but had already been replaced by ai.

Proto Eskimo may have had some instances of three-vowel clusters, in addition to an almost complete set of two-vowel groups, but certainly had no more extensive sequences than three. Yupik and Barrow-Mackenzie evidently maintained the original limitation as to the number of vowels in sequence. Wales and Greenland arrived at more extensive groups by the loss or vocalization of intervocalic consonants.

7.5. Sequences of vowel-consonant-vowel of Proto Eskimo in many instances suffered special modification in the dialects. Consonants involved in these sequences include v j γ s.

Before or after u, intervocalic v is lost in Yupik if the flanking vowels are short. However initial uv loses the vowel instead of the consonant and this happens even if the following vowel is long. Initial ivu becomes ju. In W, intervocalic v is regularly vocalized to u and this vowel is lost entirely in contact with a flanking u. In G original uva becomes ua and ivu becomes uju, but in other instances v is preserved. In B and

M uvi becomes ui, but v is preserved elsewhere. No instances of uvu have been found in any of the dialects. Examples: G tuvi, NBM tui, W tuik (contrast dual N tuviik with v preserved because of the following double vowel); G uvi, WM uik, U vii, K vi *husband*; BMG uvaŋa, W uaŋa, S vaŋa *I*; B puvak, WG puak *lung* (N puvaχ is not directly connected); BM sivu, UNK ciu-, G suju *front*; BM ivuniq, W iuniq *ice-hummock* (perhaps also cp. W iuʀ- *rub*, U juʀ- *cure*).

Inupik generally preserves intervocalic j, but G changes it to ʃ in the combinations iju iji, while WB change it to ʀ in the sequence iju. In Yupik iji becomes ii; uji remains intact. Our one example of uji is reduced to ui in Inupik: Examples: WBM iji-, G iʃiʀ-, UNK iiə- *hide*; M qijuk, WB qijuk, G qiʃuk *wood*; UK qujiʀ-, WBG quiʀ- *cough*.

In non-initial syllables, sequences like əja əju lose the ə in Yupik but become ia iu in Inupik. Similarly aja loses the first vowel in Yupik, and gives ia in WBM but is preserved in Greenlandic. Examples: UK uksuq, N uksuχ, S ukʃuq, W uγiuq, BMG ukiuq *winter* from P ukijuʀ; UK pamjuq, N pamjuχ, WBMG pamiuq *bird's tail*; G aqajaq, UN aqsaq, N aqsaχ, S aqʃaq, *belly*; G taʀajuq, UKS taʀjuq, N taʀjuχ, WBM tariuq *salt, ocean*.

The sequence inu evidently changed in Yupik word-initial to ju, but only one example has been found: WBMG inuk, UKS juk, N jux *person*.

Intervocalic s after high vowels (i u) is changed to j in Yupik and the sequence thus created follows the rules of other Yupik j-sequences. Examples: BMG ikusik, W iγusik, U ikuujik, N ikuujix, S ikujik *elbow*; BCG isaʀuq, W izakuq, N jaqqu-, K jakuq *wing*; BMG kisima, W kizima, N kiima *I alone*; BM pisuγ-, W ·pizuγ-, UK pijuγ- *want*.

Intervocalic γ is stable in Yupik and generally also in Inupik. However, in the position after i or ə intervocalic γ is changed to u in W and is lost entirely when flanked by u in the same way as v. Examples: BMG iγa, W iua *kitchen* (cp. U γan *pot*); BMG iγalaq, W iualaq *window*; WBM niγiq, W niuiq *east wind*; BMG tiγu-, W tiu- *seize*.

7.6. The morphologic alternations of phonemes in the modern Eskimo dialects is in part the outgrowth of the phonetic changes that have taken place since Proto Eskimo times, but some of these processes must have been in effect during the common period. We may infer that this is the case wherever we find Yupik and Inupik dialects displaying exactly the same interchanges. The regular alternation between continuant and stop at the beginning of suffixes, e.g. K ataavut *our father* but juxput *our person*, G takuvuq *is seen* but uniγpuq *remains*, is obviously very ancient. Its origin evidently goes back long before the latest common Eskimo period, to a time when continuant and stop were phonetic variants in definable phonetic environment of a single phoneme. A consonant cluster like ʀv could contrast in Proto Eskimo with ʀp, but at some prior epoch the prototype of the former cluster may have been a sequence with interconsonantal vowel, that is P aʀva/aʀpa may well have been based on a pre-Eskimo aqəpa/aqpa contrast. The pre-Eskimo phonemic structure assumed here probably also had no contrast between stop and spirant between vowels, but instead had a difference between apa and appa as the forerunners of Proto Eskimo ava/apa.

The interchange between medial t and final n, as in javun *harpoon*, javuutit *harpoons*, evidently already operated in Proto Eskimo times. Also the loss of ə in some positions is Proto Eskimo. Probably the positions of loss prevailing in Inupik were mostly established in the common period. These include after t at the end of a word and before a single medial consonant. Also perhaps between any two intervocalic consonants in the position following the first vowel of the word, e.g. aŋə-li- becomes aŋli- *grow* (G aγli-, U aŋli-).

A NOTE ON PRIMITIVE LANGUAGES

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0.1. Introductory
1.1. The tradition of "13 verbs for washing,"—Jespersen, Sayce, Pickering
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0.1. Most modern linguists who have had experience of preliterate languages would reject the idea of the inefficiency, formlessness, and over-particularity of primitive speech, which once seemed so well grounded in the evolutionary anthropology characteristic of the 19th century. Yet there are many who still hold such views; namely that primitive tongues have a multiplicity of forms, fail to generalize, and are almost exclusively concrete. The following passage, from a book by a professional linguist, published in 1951, is an example which has a familiar ring:

> To have a separate word for all the things we may talk about would impose a crippling burden on our memory. We should be worse off than the savage [read Cherokee] who has special terms for *wash oneself . . . wash someone else, . . .* but none for the simple act of *washing*.[1]

This paper will be devoted to trailing the washing Cherokee through books on general linguistics, proving that he is a ghost though one that still walks, and to laying him once for all.

1.1. The linguist who has done most to present the picture of Cherokee as inefficiently particular because it lacks a general term for washing is no less a figure than Otto Jespersen. The statement that there are thirteen different verbs for washing appears first in Sprogets Oprindelse in 1892, and for the last time in Efficiency in Linguistic Change, in 1941. In between it can be found in Progress in Language, Growth and Structure of the English Language, and Language.[2] It was a favorite example of primitive inefficiency to which he returned again and again, embedding it in books which still enjoy great prestige. Jespersen got the example from A. H. Sayce, though his acknowledgment is not perfectly clear, since what he acknowledges is material which adjoins the Cherokee forms in Sayce's books.[3] Sayce, in turn, quite properly acknowledges the source of his material,

[1] Stephen Ullmann, Words and Their Use (New York: Philosophical Library, 1951), 49.

[2] Sprogets Oprindelse (Tilskueren 9.849): Progress in Language (1894), 351: Growth and Structure Of The English Language (4th ed., 1923), 54: Language (1921), 430: Efficiency in Linguistic Change (Det Kgl. Danske Videnskabernes Selskab, Hist. -filolog. Med., 27.45, 1941).

[3] A. H. Sayce, The Principles of Comparative Philology (1874), 78–79. It was primarily this quotation that Jespersen used, since it alone quotes the actual verb forms. Sayce gives only twelve forms, though he quotes the figure thirteen, in spite of the fact that there were fourteen in his source. Sayce erroneously says that all Cherokee verb forms are incorporating, "the object being never mentioned." The example is also used in Sayce's Introduction To The Science Of Language (1880), 1.120 and 2.5–6. It is to this latter book that Jespersen refers on p. 429 of his Language. Sayce's forms are by no means accurately quoted, and Jespersen in turn adds several new errors, which he never corrected in his successive quotations of the Cherokee forms.

which is the starting point of the whole tradition, though he uses this source in the later of the two forms in which it appeared. The earliest form is an article by the pioneer Americanist, John Pickering, in the Collections of the Massachusetts Historical Society (x, 2nd series) in 1823. The article forms a long appendix to a reprint of "Dr. Edwards' Observations on the Mohegan Language," and was made the basis of a later article by Pickering in 1831 in volume six of the Encyclopedia Americana. This second form was printed again in 1836 and several later editions of the encyclopedia, without change. It was the encyclopedia article (or rather a separate printing of it) that Sayce used.

1.2. It is not necessary to go into other uses of the Cherokee example which are off the main line of transmission, but one at least, deserves comment. This is the discussion by J. N. B. Hewitt, who alone shows scepticism. In 1893 he wrote

> An analyzation of the fourteen examples given shows that they are not all verbs denotive of washing; some signify *to swim*, others *to soak*, others *to wet or sprinkle*, and still others to boil.[4]

It is curious that Hewitt is the only scholar who took the trouble to count the forms, thereby correcting the original statement that there are thirteen verbs, though actually fourteen were given. It is even more curious that the verbs do not mean what Hewitt says they mean. He was either guessing, or was misled by the forms of Northern Iroquois which he knew well.

[4] Other works which quote the familiar example are J. G. Shea, Languages Of The American Indians (The American Cyclopedia, New York: 1873), 1.410: André Lefèvre, Race and Language (New York: 1894), 188: Hermann Osthoff, Vom Suppletivwesen der indogermanischen Sprachen (Heidelberg: 1899), 79. The Hewitt discussion is in Polysynthesis In The Languages Of The American Indians, AA, 6.398 (1893). Doubtless other quotations could be found.

1.3. The passage from Pickering, in its early form, follows. The passage is found at page 121, though there is an earlier reference at page 114 to Mr. Buthrick as "present missionary to the Cherokees," and stating that Pickering was indebted to a "learned friend" for the communication from Buthrick. I have slightly modified the passage, by adding numbers for ease of reference, and omitting the repeated portions of the translations.

> In the Cherokee (says the Rev. Mr. Buthrick . . .) thirteen different verbs are used to express the action of *washing* as follows
>
> (1) Cŭ tū wō *I am washing myself, as in a river*
> (2) Cŭ lē stū lā *my head*
> (3) Tsē stū lā *another person's head*
> (4) Cŭ cŭ squō *my face*
> (5) Tsē cŭ squō *another's face*
> (6) Tā cà sū lā *my hands*
> (7) Tā tsē yà su la *another's hands*
> (8) Tā cō sū lā *my feet*
> (9) Tā tsē yâ sū la *another's feet*
> (10) Tā cŭng kē lâ *my clothes*
> (11) Tā tse yŭng kē lâ *another's clothes*
> (12) Tā cŭ tē yā *dishes*
> (13) Tsē yŭ wâ *a child*
> (14) Cô wē lâ *meat*
>
> This difference of words prevents the necessity of mentioning the object washed. So also with the verbs *love, take, have, leave, die, weigh*, etc.

"Mr. Buthrick" was the Reverend Daniel Sabin Butrick, 1789–1851, missionary to the Cherokees from 1818 until his death, in the period both before and after the removal. He was the author of several manuscript volumes now in the Houghton Library at Harvard, and co-author of a Cherokee speller in the pre-Sequoyah roman script developed by the missionaries. There is a good deal of rather engaging information about him in Marion Starkey, The Cherokee Nation.[5]

[5] I owe the identification of "Mr. Buthrick" to the kindness of Miss Mary Walker of the American Board of Commissioners for Foreign Missions. It has not been possible for me to examine Butrick's various works in manuscript and print. The Cherokee Nation was published by Knopf in 1946.

2.1. The older printed sources on Cherokee grammar are at first sight not much help with these forms.[6] A more useful hint is contained in the encyclopedia form of the list, where we are told that the transcription is "to be pronounced as in English." We can thus make the guess that form (3) for instance, would be approximately [tsistule] in a broad IPA notation. Comparison with other notations also enables us to identify the sequence written by Butrick as /-ŭng-/ as a nasalized central vowel, which can be conveniently transcribed as /ʌ/. It should be noted that Butrick's transcriptions are by no means perfectly consistent, since he often omits his diacritic marks, and seems to have rather more diacritics than he actually needs. None the less the diacritics are a help, and it is far more possible to identify the words as he gave them, than it is to identify them in the lists given by Sayce and Jespersen where the diacritics are omitted.

The transcription used in the identifications which follow is the Worcester transliteration of the Sequoyah syllabary, with two modifications. Worcester uses the character /v/ for the nasalized vowel given above, for which I have substituted the more familiar /ʌ/. I have also, in the interests of consistency, changed Worcester's /squo/ to /skwo/. The transliteration will clearly identify the Sequoyah characters for any student of Cherokee, and thus bring the word list into line with the writing in which the large body of Cherokee material is recorded. The syllabary is in close accord with the phonemic notation of North Carolina Cherokee worked out by Bender and Harris, though there are some departures. Thus the syllabary, like other early writings of Cherokee, makes a distinction between some voiced and voiceless stops which is unnecessary. As a result, there is a good deal of hesitation in spelling, forms occurring as either /gada-/ or /kata-/. I have transcribed such forms as spelled, and the reader should disregard consequent differences. The syllabary does not record suprasegmental phonemes, but even with this limitation it is far more usable than the close phonetic notation used by Olbrechts, in which there is a good deal of overlapping.[7] Forms from other sources are given in the notation there adopted.

2.21. The first form, cŭtŭwō, can be fairly quickly identified. In the syllabary it would be /katawo/ or /gadawo/, the last form agreeing with Bender-Harris. The first element is /k-/, the marker of the first person actor. The second element is /-ata-/, a reflexive. The forms and their translation are supported by Gallatin and Worcester, American Antiquarian Society (II, 420), where there is the form gatalungiha *I tie myself*. The third and final element is /-wo/, *bathe*. Professor Lounsbury, who has been kind enough to give me much information from his Cherokee experience, tells me that this stem means *water* in Northern Iroquoian. In Cherokee it is used for bathing in a stream, their characteristic rite of purification. Not unnaturally the stem appears in such a form as /tinadawosgi/, the Cherokee translation of *Baptist*.[8] The construction as a whole is then /k-ata-wo/, *I-reflexive-*

[6] The principle older sources are Pickering, Grammar Of The Cherokee Language (1831), a fragment, and H. C. von der Gabelentz, Kurze Grammatik der Tscherokesischen Sprache (Zeitschrift für die Wissenschaft der Sprache, 3.257–300, 1851). The latter work is largely based on paradigms originally published in The Cherokee Messenger. For these and others consult Pilling, Bibliography Of The Iroquoian Languages, BAE-B, 6 (1888).

[7] Ernest Bender and Zellig S. Harris, The Phonemes of North Carolina Cherokee, IJAL 12.14–21 (1946). James Mooney and Frans M. Olbrechts, The Swimmer Manuscript, BAE-B, 99 (1932).

[8] As in the title page of The Cherokee Messenger (Cherokee [Oklahoma]: Baptist Mission Press, 1846). This and other terms taken over into the missionary literature, suggest the usefulness of the translation material not only as a source for knowledge of the language, but as a worthwhile source for the study of acculturation.

bathe (*in a stream*), and is amply supported by /gadawósgʌgí/ given by Bender and Harris (p. 15), with the meaning *I was bathing*.

2.22. The second form, *I am washing my head*, would be /kalisdule/ in the syllabary. The first element is the marker of the first person actor as above. The second element is another reflexive. It has been quoted by Allen, IJAL 6.190, though there it is wrongly analyzed as /-li-/. The preceding pronoun is in the shape regular before vowels, proving that the following element is /-ali-/. Further support is found in Pickering, Grammar of the Cherokee Language (p. 31), which quotes galituwa *I comb myself*. The third morpheme, /-sdul-/, I have been unable to run down, but it is evident that it has the meaning *head*.[9] The final element is /-e/, a verbal stem meaning *wash*. It is supported by forms such as John xiii, 14, /yiditsadatosuleha/, *ye ought to wash one another's feet*, where it is the penultimate syllable. Our form then analyzes as /k-ali-sdul-e/, *I-reflexive-head-wash*.

2.23. Form three, tsēstūlā *I am washing another's head*, differs from the preceding form only by lacking the reflexive, so that the first person marker takes the form which is regular before consonants. The construction is therefore /tsi-sdul-e/, *I-head-wash*, the owner of the head unspecified.

2.24. Form four, cŭcŭsquō, is slightly erroneous in both transcription and meaning. In the syllabary it would be /kagʌ-skwo/, Butrick having failed to observe the difference in vowel phonemes between the first two syllables. In translation it should be *I wash his face*, not *my face*. The first element is the usual first person marker in pre-vocalic form. This is followed by a third person goal /-a-/, giving what is sometimes called a "transition," that is, a fused actor-goal pronoun (see Gabelentz, p. 284, galungiha, *I bind it*.) The element /-a-/ can not be a part of the following morpheme, since form five, below, establishes that the following element begins with a consonant. The noun morpheme is /-gʌsk-/, a bound form with the meaning *face*. It is supported by /hagʌskwogesdi/, *wash thy face*, Matthew vi, 17. The whole construction is then /k-a-gʌsk-wo/, *I-him* (or *it*)*-face-wash*.

2.25. Form five, tsēcŭsquō, lacks the object, and contains only the first person marker. It is /tsi-gʌsk-wo/, *I-face-wash*, whose face unspecified.

2.26. The sixth form, tācàsūlā, introduces another formative element, a dual or plural prefix, which is illustrated by Gabelentz (p. 281), katitoti *I use a spoon*, in contrast with dekatitoti *I use several spoons*. The concrete morpheme is /-asul-/ meaning *extremity*, either hand or foot. It is supported by the form from John xiii, quoted earlier. The construction is /de-k-asul-e/, *plural object-I-extremity-wash*. The construction breaks down as /de-tsi-ya-(a)sul-e/, *plural object-I-him-extremity-wash*.

2.27. Form seven, tātsēyàsula, has only one new element, the 'transition,' /tsiya-/, for which see Gabelentz (p. 282). It is similar in meaning to that quoted in **2.24** above, *I-him*.

2.28. Forms eight and nine can be dismissed, since they are identical with six and seven.

2.29. In the remaining five forms, the included noun morphemes have not been identified, but some guesses can be made about their shapes. *Clothes* would seem to be /-ʌgil-/, and *dish* to be /-ati(y)-/. The

[9] It is possible that a long complex quoted by Olbrechts, BAE-B, 99.305 contains this morpheme, but the complex is not capable of analysis. The complex is [gʌwuts(h)stɪlawistidegesti], *it* (*to*) *my head cling as I go about it will*. The element in question is [-stɪl-], but the identification seems rather unlikely.

latter form may very possibly be the same as /-ati-/ in dekatitoti *I use several spoons*, quoted in **2.26.** above. The form *wash a child* may contain /yʌwi/, *man, person*, and *meat* would presumably be /-owil-/. With these guesses, a conjectural analysis of the last forms is as follows:

(10) /de-g-ʌgil-e/, *plural object-I-clothing-wash.*
(11) /de-tsi-y(a)-ʌgil-e/, *plural object-I-him-clothing-wash.*
(12) /de-k-atiy-e/, *plural object-I-dish* (or *spoon*)*-wash.*
(13) /tsi-yʌw(i)-e/, *I-person*(?)*-wash.*
(14) /g-owil-e/, *I-meat-wash.*

3.1. My analysis is by no means perfect, but it is sufficient to show that the forms are genuine, and are systematic. Yet the complexity of the relation of these forms to Cherokee structure is made greater by the fact that Butrick's list of verbs (*love, have, weigh*, etc.) suggests that he was actually describing two different phenomena, but in a fashion so compressed as to be unintelligible. One of these phenomena is the existence of a score or so of "classificatory verbs" which take different forms according to whether the object of action is round, animate, long and thin, etc. These forms have been described by Professor Haas, and long ago by Worcester,[10] though it is interesting that the grammarians like Gabelentz missed them entirely. A second phenomenon is actual noun incorporation, which Professor Lounsbury tells me now occurs only with nouns for parts of the body and certain articles of clothing, though it is evident from forms quoted by Mooney[11] that incorporation must once have been more widespread. The incorporated noun morphemes are now always bound, and usually differ altogether from the ordinary free forms for the same objects. The two phenomena can, but need not, be combined. It is worth noting that Sayce misunderstood Butrick's reasonably careful statement, and jumped to the conclusion that this very limited incorporation and classification was characteristic of all verbs.

3.2. It is clear that Cherokee, so far from being hopelessly over-specific, is a language like other languages, possessed of order and system, no matter if that system is different from our own. We do not find fourteen totally unrelated expressions for washing, but two morphemes only, which differ in meaning, and which enter into a whole series of systematic constructions. Even with less than perfect identification of the elements in our word list, we can see that they have a regular pattern. They follow each other in this fixed order:—number prefix of the goal, pronominal actor prefix, pronominal goal prefix, incorporated goal morpheme, action morpheme. One or more of these, of course, may be absent, and it is not maintained that what is true of these constructions is necessarily true of all others in Cherokee. Thus for instance, in constructions which I have seen in texts, it is far commoner for the action morpheme to be followed by further formative elements, than it is for the action morpheme to end the construction as here. What is important, however, is that the order of morphemes is as systematic and as fixed as the order in English *I wash my face.* The difference between the English and Cherokee constructions amounts to little more than that one set of morphemes is bound, and is a less than perfectly productive part of the linguistic structure; the other set of morphemes is

[10] Mary R. Haas, Classificatory Verbs In Muskogee, IJAL, 14.244–45 (1948), and S. A. Worcester in Schoolcraft, Information Respecting The History, Conditions and Prospects Of Indian Tribes Of The United States (Philadelphia: 1852), 2.443–56.

[11] James Mooney, Myths Of The Cherokee, BAE-R 19.509 (1897–98). ahu'ludege *he throws away the drum* (*habitual*), from ahu'li *drum*, and akwăde'gi *I am throwing it away* (*round object*). This is a typical incorporating form which does not fall within the present limitation.

free, and enters into an unlimited number of constructions.

4.0. As to the supposed lack of generalizing power, it is ironical that the list of forms before us generalizes in one instance more than does English. We can not content ourselves with a general term like extremity, but must specify hand or foot. I can cite still other forms which are constructed in a sufficiently generalized fashion so that Jespersen would have had to call them civilized, had he known them. The suffix /-ya/, *real* or *principal*, can be added to /ata/, *tree*, to give /ataya/, *principal tree, oak*, and to /yʌwi/, *man*, to give /yʌwiya/, *principal man, Indian*. I can think of no better example of a cultural lag than that the letter written by Butrick some time before 1823 is still having its effect in 1951 because linguists incorporated his statements in supposedly authoritative books without bothering to subject his list of forms to analysis.

REVIEWS AND NOTES

ATHAPASKAN AND SINO-TIBETAN. By Robert Shafer, IJAL 18.12 (1952).

0. In this article, Shafer gives seventy lexical comparisons between these two stocks on both sides of the Pacific, and shows consistent phonological correspondences in all the cognates. The inner consistency of this material, both as to finals (vowel plus final consonant) and initials, is such as to confirm Sapir's theory of the genetic unity of the complex. Shafer has thus made an important contribution to linguistics and to the prehistory of North America. And since Sapir's evidence has not yet been published, Shafer's work constitutes an independent corroboration of the correctness of the theory. Pending the eventual publication of Sapir's notes, it may be in order for me, as one of several students who heard Sapir in a brief discussion of his theory in his Primitive Linguistics course at Yale in 1933, to testify that Shafer's work agrees with Sapir's in essential phonological details as well as in broad principle. The following comments are based on my memory of that discussion and upon my own examination of Nadene relationships.[1]

1. Sapir's brief remarks on Na-dene Sino-tibetan were made in response to questions from students during one of his lectures on Athapaskan and its sister language groups in America. As I remember, these were the main facts of the relationship as he stated it. Athapaskan, a family of twenty odd distinct languages closely related to each other, has a genetic connection on an earlier level with Tlingit. Eyak, which Sapir had been able to examine only briefly may be intermediate between Athapaskan and Tlingit. Tlingit-Athapaskan is more distantly related to Haida, and with it constitute Sapir's Na-dene stock. Still farther back in time, the Na-dene stock is linked with Sino-tibetan. There are broad structural similarities, particularly in the tendency to prefixing, but the earlier form of this trait has been variously changed in the modern languages. Prefixes are present in the earliest reported forms of Sino-tibetan languages, but many of the modern ones have lost it or reduced its scope. The Na-dene languages have built up the prefixing technique by associating originally independent elements into the verb complex, and this trend has gone farthest in Athapaskan. There are traces of old formative suffixes perhaps in all the Na-dene-Sino-tibetan languages, but only to a limited extent does suffixing continue to be a live process in some of the languages. Sapir had found a sufficient body of cognates with regular phonetic correspondences to bear out the relationship. He gave us a set of equivalences in stop consonants and illustrated with three concrete examples. He had not published his evidence because he wanted to work out more fully the detailed phonology on both sides of the Pacific. In particular he wanted to get farther along in his reconstruction of Athapaskan.

In an assay of Tlingit-Athapaskan to estimate the time-depth of this group, I found 44% agreement in my test vocabulary. This amount of agreement indicates that Tlingit and Athapaskan have been diverging from the earlier common Tlingit-athapaskan for about twenty centuries. The time depth of Na-dene must be somewhat more than this.

[1] My material is mainly that which I assembled while preparing Diffusional Divergence and Archaic Residue as Historical Explanations, Southwestern Journal of Anthropology 7.1–21 (1951). Works consulted include Edward Sapir, The Na-dene Languages, A Preliminary Report, American Anthropologist 17.534–58 (1915); Pliny Earle Goddard, Has Tlingit a Genetic Relation to Athapasca? IJAL 1.266–79 (1920); H V Velten, Two southern Tlingit tales, IJAL 10.65–74 (1939) and Three Tlingit Stories, IJAL 10.168–180 (1944); John R Swanton, Tlingit, Hdbk of American Indian Languages 1.159–204 (1911) and Haida, Hdbk 1.205–82.

2. Shafer has mistakenly assumed that Athapaskan d g etc. represent voiced stops and that t k etc. are unaspirated surds, whereas the usage of Athapaskan linguists is d g for weak unaspirated surds and t k for strong aspirated surds. This misunderstanding does not invalidate his formulas of correspondence but complicates his explanation of the phonetic developments. Tlingit and Haida have been described as having "sonant" consonants, represented by d g etc, but it is not clear whether the description is accurate or loose. At any rate it is safe to refer to the d g series in all Na-dene languages as unaspirated, the t k series as aspirated. The threefold pattern of unaspirated-aspirated-glottalized agrees with Tsimshian and Kwakiutl, non-Na-dene language groups of the northwest coast area in America. In the Sino-tibetan languages, the typical contrast is between unaspirated and aspirated (shown by p t etc. as against ph th etc.), but some of the languages have also a voiced series. In some there is a glottalic tinge to the voiced stops.

The present paper departs from usual practice by using g k and q ɢ to distinguish front and back palatals in Athapaskan and Na-dene. Sonant fricatives are not shown for Proto Athapaskan and Na-dene (except quoting Sapir) because the indication is that they were not independent phonemes in those times. The use of asterisks is avoided, since all forms indicated as Ath., Tln. (Tlingit-athapaskan), Nad. or St. (Sino-tibetan) are necessarily reconstructed and not actually recorded words. Tones are for the most part omitted, because they were not immediately available and because the tones are not yet under discussion. The reconstructed forms and some of the contemporary ones are to be regarded as approximate, because it was not possible to make a thorough check of all phonetic details. They should be near enough right to show the main points under discussion.

3. Except for one Tlingit element (ftn 8), Shafer limits his comparison on the American side to Athapaskan. If Tlingit and Haida had been lost without record or if there were no available material on them, his treatment would be the only one possible. However, since such material is available, he could have made his case stronger by including such comparisons. One result would have been additional cognate sets. Another would have been Tlingit and Haida comparisons to strengthen his proof for many of the relationships he has found between Athapaskan and Sino-tibetan. This lack has been partly supplied here. By consulting easily available sources, I have found Tlingit or Haida parallels for about one fourth of Shafer's comparisons. To avoid repetition I give for the most part only one Sino-tibetan language and a reconstructed form for Athapaskan (numbers refer to Shafer's listing):

Tibetan -kha *on, above, surface*, Ath. qa- *motion up*, qa *surface*, Tlingit -k *on*, ka.χ *at surface, upon* (1.1).

Tibetan ya *above, up*, Ath. ya·- *up, upward*, ya *sky*, Tlingit yakyi *day*, Haida ya·naŋ *clouds* (1.6).

Kukish ya *all*, Ath. ya·- *all, distributive plural*, Tlingit yáχ *entirely, severally, all* (1.7).

Chinese d'ā *to flow*, Mattole da(·)- *prefix referring to water, liquid*, Tlingit da- *to flow, flood* (1.9).

Burmese swà, Ath. xuʔ, Tlingit ʔux *tooth* (2.2). Perhaps Nad. ʔuxuʔ, St. sxʷaʔ.

Tibetan či *what, why, how?* Ath ɲi· *interrogative element*, Haida gis *where?* (3.2). Also cp. Tlingit gusu *where?*

Tibetan ādi *this*, Ath. di *this*, Haida dai *this*, Tlingit de *now* (3.5). Nad. perhaps dei.

Tibetan mi *person*, Ath. de-ne *person*, Tlingit -nax *person* (*with numerals*), Haida na *house* (3.8).

Kukish-Lushei hi *this*, he, Ath. hai *that*, Tlingit he *this* (3.10).

Tibetan hɦu *this*, Ath. ho *he*, Tlingit hu *he* (4.5).

Kukish-Lushei khu *smoke, vapor*, Siamese-Lao gwăn *smoke*, Ath. -gùh *foggy*, Tlingit g^{w}as *fog* (4.2, 14.2).

Kukish-Lushe ke *foot, leg*, Ath. -qe? or -k^{w}e? *foot, moccasin*, Tlingit χus *foot*, ke *to track* (8.1).

Tibetan lag-pa *hand*, Ath. -la? *hand*, Tlingit ǰeq finger, ǰeq^{w} *seize, grab, catch* (10.1). Also perhaps cp. Ath. ła? *one*, Tlingit ǰe *one*, Haida ǰa- *first*.

Tibetan dud-pa *smoke*, Ath. -ɬudi *to smoke*, Tlingit ɬuč *to blacken by fire* (11.4). Also cp. Ath. -dù *hot*, Tibetan dro-ba *warm* (5.1).

Kukish-Lushei ka·ŋ *to burn*, Chinese xiuen *fire*, Ath. -ɢaŋ? *to burn*, qu·ŋ? *fire*, Tlingit gan *to burn*, Haida Guχa *to burn*, χal- *by fire*, Gayu *fire* (13.2, 14.2). Two original forms, perhaps q?a·ŋ? and qhu·ŋ, seem to be confused in development.

Tibetan sems *think*, Ath. -seŋ *think*, Tlingit ɜi *think* (15.2).

Tibetan ākhel *pack on, load*, Ath. -χał *to pack*, Tlingit χa *to bring, take* (16.2). Also Ath. -qał *carry, travel with a pack*, Tibetan bkal *to load, lay on a burden*.

Tibetan āges, āgas *split, crack*, Ath. ɢes *to break*, Tlingit ƙuc *to break* (*a strap*) (18.2).

4. In his class discussion, Sapir gave three examples illustrating the equivalence of Na-dene glottalized to Sino-tibetan voiced stops and affricates. It happens that none of them are included in Shafer's material.

Ath. čax *hat*, Tlingit śax^{w}, Nad. sčax^{w}, Tibetan ža-mo from sɹa-. (Perhaps Nad. skax^{w}—M.S.)

Tlingit śi·s *wind*, Tibetan rẓi from sẓi.

Nad. ɬaγ^{w}- feather, Tibetan dab-ma from ndag^{w} or ndaγ^{w}-.

This phonological relationship is noted by Shafer (p. 18), whose material contains four illustrations of it (11.3, 11.4, 13.1, 18.2). These examples happen to include only dental and postpalatal stops, hence Shafer fails to discover that the same relationship applies also to the affricates, a fact which Sapir's examples show.

Shafer gives the formula Ath. c? = St. č based upon four cognate sets (3.3, 4.3, 11.1, 16.1), but it happens that in these four cases he has no Tibetan forms and the other languages do not maintain the original distinction of voiced and voiceless stops. Similarly 1.10 has Ath. t? corresponding to simple t in Sino-tibetan languages other than Tibetan. These examples may very well belong with the foregoing. Together with the three instances from Sapir's class, we seem to have twelve instances of the same correspondence.

5. The stops and affricates, other than the series just discussed, are not easy to unravel, because there are many apparent inconsistencies within the Sino-tibetan branch. Sapir mentioned two general equivalences, aspirate to aspirate and simple to simple, but he recognized that there were secondary developments, both of functional and purely phonetic character, which obscure the picture. Shafer states (pp. 17–18) that 'Initials are not always fixed in Sino-Tibetan . . . Old Bodish initials may vary with the same category . . . and we find a similar alternation of initials for the same root in other Sino-Tibetan languages. This makes the establishment of phonetic equations for initials difficult, but not impossible.' Shafer's equivalences seem correct as far as they go, but they omit many of the comparisons. Sapir's formulas also seem incomplete. An approximate survey of the correspondences in Shafer's material gives the following results (t is taken to represent any stop of affricate other than labial):

Nadene	Sino-tib.	Number of Examples	Reconstruction
t	t	6	t
t	th	6	th
ɬ	d	12	t? / d?
d	d	8	d
d	th	5	dh

The alinement of correspondences suggests that Dene-tibetan may have had six possible consonantal initials, as shown in the reconstruction column. In Sino-tibetan dh fell together with th, while t' and d' fell together with d. In Athapaskan d either remained or was devoiced, dh lost its aspiration falling together with d, d' fell together with t'; in the meantime original t was strengthened to an aspirate, merging with original th.

6. With regard to the amount of lexical evidence found and to be expected, Shafer states:

> The data presented here is not extensive. If it were, it would be suspect a priori. For if one computes the time it probably took for the languages involved to become as divergent as they now are, I think all will agree it runs into the milleniums . . . if we find a few [parallels] which are phonetically and semantically close it is all that we may expect at present.

While this statement is substantially correct, it seems to exaggerate the difficulties somewhat. Actually we have every right to expect a considerably larger number of cognates for Dene-tibetan, because of the great number of languages in both branches. With twenty odd Athapaskan tongues, it will be possible to reconstruct a large Proto Athapaskan vocabulary, dating back probably more than a thousand years. These same languages taken in conjunction with Eyak, Tlingit and Haida will reveal much of the ancient Nadene vocabulary of perhaps 3000 years ago. The conditions in Sino-tibetan are considerably more favorable, both as to number of languages and as to the antiquity of early vocabularies, so that a large body of Proto Sino-tibetan is reconstructible. From common Sino-tibetan to common Na-dene, the gap cannot be so enormous. Cognates will not be numerous but neither will they be excessively rare. To test this inference I made a small search for connections between modern colloquial North Chinese and Na-dene and was rewarded with the following similarities:

N Chinese ʃān *mountain*, Ath. xes, Tlingit ʃa.
N Chinese siĕ *blood*, Tlingit ʃe, Haida ɢai, Nad. perhaps xei.
N Chinese sìŋ name, Ath. -si', Tlingit sa.
N Chinese -fà hair, Ath. χa', Tlingit χoχʷ, Tln. χʷaχ.
N Chinese siàu laugh, Ath. -xe, Tlingit ʃu, Tln. xeu.
N Chinese cài again, Ath. ċi, Tlingit śu.
N Chinese lā pull, Ath. -los.
N Chinese khàn look, Ath. ɢes, Tlingit ɢin.

Probably even more indicative of the comparative possibilities is the fact that the three correspondences cited by Sapir to his class are not included in Shafer's list. Sapir had ready access to material in only a few Sino-Tibetan languages, and Shafer's familiarity with Na-dene is far less than Sapir's. Therefore it is to be expected that their lists will overlap only in part, that the combined material will be much larger than either list by itself.

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THE SOVIET LINGUISTIC CONTROVERSY. Translated from the Soviet Press by J. V. Murra, R. M. Hankin, F. Holling and edited by E. J. Simmons. King's Crown Press, New York, 1951, pp. 98.

The Soviet Linguistic Controversy is a collection of 32 short articles and letters translated, with one exception, from Pravda which chronicle the final stages of a major readjustment in linguistic theory in the U. S. S. R., namely, the extrication of Soviet linguistics from a blind alley into which it had been unwittingly maneuvered by too much concern with Marxism and too little attention to science. The average linguist will hardly, as a consequence, consider the present volume a significant contribution to the science of linguistics, but those who, like the reviewer, have wondered

at the magic of dialetical materialism as an instrument of scientific investigation in linguistics will be encouraged by the Russian abandonment of untenable theories and methods.

The recent controversy was focused almost exclusively on the theories and methods of Nikolai Yakovlevich Marr (1864–1934) which, solely on the basis of their avowed Marxian content, had been elevated to the position of scholarly dogma in the academies and universities of Russia. The immediate cause of the controversy was the realization that both practical and theoretical linguistics were reaching a point of stagnation in which it was impossible for "principled Bolshevist criticism" to answer the attacks on Marr by dissident Soviet linguists nor for the Marrists "to present a single report throwing light on the basic theoretical questions of Marr's teaching." (p. 8)[1]

Official cognisance of the situation was taken in May, 1950 by Pravda. The editors introduced an article by Prof. A. Chikobava, "On Certain Problems of Soviet Linguistics," with the following note:

> In connection with the unsatisfactory state of Soviet linguistics, the editors consider it essential to organize an open discussion in Pravda in order through criticism and self-criticism to overcome the stagnation in the development of Soviet linguistics and to give correct direction to further scientific work in this field. Arn. Chikobava's article is printed to promote discussion. (p. 9)

Professor Chikobava's lead article opened the discussion with a sharp attack on Marr. He stated:

> It has been shown that the fundamental statements of Marx, Engels, Lenin and Stalin on language and linguistics have been replaced in the work of many linguists by Academician N. Ya. Marr's incorrect premises on linguistic theory. In case after case, lip service to Marxism-Leninism turns out in reality to be defense of N. Ya. Marr's fundamental errors. (p. 9)

Chikobava's attack on Marr was immediately answered by I. I. Meshchaninov, the director of the Institute of Language and Thought of the U. S. S. R. Academy of Sciences, a product of Marr's teaching and his most ardent follower. Meshchaninov "disagreed radically" with Chikobava and maintained "that to build a truly Marxist linguistic science without Marr is unacceptable to us." (p. 20)

The articles by Chikobava and Meshchaninov clearly established the direction and the content of the discussion which was to follow. Attention was focused not so much on the validity of empiric linguistic facts (which never became a serious point of contention) but rather on the proper interpretation of dialectical materialism as a foundation for the programmatic requirements of Soviet linguistics. This orientation not only removed the discussion from the realm of linguistics proper but placed the resolution of the controversy beyond the control of the linguists involved, that is, squarely within the jurisdiction of specialists on Marxian rather than linguistic theory. As a consequence, after eleven more articles, most of which were critical of Marr's theories, Pravda effectively brought the controversy to a close by publishing an authoritative statement, On Marxism in Linguistics, by none other than Stalin himself. Stalin, with greater acumen than most of the leading Soviet linguists, aligned himself with the critics of Marr and with a slashing attack on Marr's Marxism practically demolished the psuedo-scientific foundations of Soviet linguistics.

The Marrist errors at which Stalin pointed an accusing and authoritative finger resulted from an uncritical application of Marxist principles to linguistic theory and, it may be added, from a cavalier disregard for empiric fact. "Marr," as Stalin puts it, "really did want to and tried to be a Marxist, but he did not succeed . . . He was merely a simplifier and vulgarizer of Marxism." (p. 76) Marr's fundamental Marxist

[1] All page references are to the present volume regardless of the original source of the quotation.

errors, which will be recognized by any non-Marxist as basic errors in observation and judgment, were briefly as follows:

Taking the tenet from historical materialism that culture is divided into two parts, the economic structure or *base* and the dependent *superstructure* (defined by Stalin as the "political, legal, religious, artistic, and philosophical views of society and their corresponding political, legal, and other institutions, [p. 70]) Marr maintained that "language forms a superstructural category on a production and productive relations base." (p. 11) Changes in the base produce related changes in the superstructure and, naturally, the language. From this Marr derived the theory of developmental stages in language which reflect major changes in productive techniques. Thus, for example, he believed that "Indo-European languages are the result of . . . an upheaval in the community depending upon new productive forms apparently connected with the discovery of metals and their widespread use in the economy." (p. 15)

Stalin's answer to this aspect of Marr's theory points out that while Russia has eliminated the capitalistic base and has replaced the old superstructure by one corresponding to the new socialist base "the Russian language has remained basically the same as it was before the October revolution." (p. 70) He concludes, as a result, that "a Marxist cannot regard language as a superstructure over a base." (p. 71)

From the notion that language is part of the superstructure Marr also developed his famous Japhetic theory which maintains that language arose monogenetically and that language is a class phenomenon. To explain the monogenetic theory of language development Marr contended that "all words in all languages, inasmuch as they are the product of a single creative process, consist of only four elements (SAL, BER, YON, ROIII . . . In the vocabulary of any language there is no word which contains anything beyond these same four elements . . . They constitute the foundation of the formal paleontologic analysis of every word." (p. 14)

Since the existence or non-existence of an original four elements is a purely linguistic matter, Stalin did not discuss this aspect of Marr's theory. Other contributors to the discussion were, however, quite sharp in their criticism of Marr's imaginative creation. Chikobava contended that "an unprovable theorem is proclaimed an axiom." (p. 18) Serebrennikov maintained that "the four-element theory was from the very beginning built literally on thin air." (p. 32) Vinogradov considered the theory "almost a fantastic instrument" (p. 53), and even Meshchaninov admitted that it exhibited some weaknesses.

The class phenomenon aspect of Marr's theory did, however, draw Stalin's attention. Marr had asserted, "with full awareness of my responsibility in making such a statement . . . that there is no language which is not of a class nature . . . Japhetidology rejects the existence of non-class languages." (p. 11) Stalin's answer points out that "as a means of communication among people in society a language serves equally all classes in society and in this respect is, in a manner of speaking, indifferent to classes," and, as a result, he concludes:

> (a) language as a means of communication has always been and remains one and the same for society and common to its members; (b) the existence of dialects and jargons does not refute but confirms the existence of a language common to the whole people of which they are ramifications and to which they are subordinate; (c) the formula of the "class nature" of language is an erroneous, un-Marxist formula. (p. 73)

Stalin's denial of the Marxist validity of the formula of language as superstructure and language as a class phenomenon presupposed the abandonment of correlative attitudes which have characterized the pronouncements of Soviet linguists. He

attacked, as a result, the "immodest, boastful, arrogant tone" which lead "to the wholesale and irresponsible rejection of everything in linguistics before N. Ya. Marr"; he condemned Marr's noisy fulminations against the method of comparative historical analysis as 'idealist' and maintained that this method was at least "an impetus to work" while Marr's theory was "an impetus to lying on top of the oven and reading teacups about the notorious four elements." Lastly, Stalin took the bourgeois 'curse' off the theory of protolanguages by pointing out that "it cannot be denied that language kinship, for example, of such nations as the Slavs is beyond dispute" and "that the study of the linguistic kinship of these nations could be of great benefit to linguistics in studying the laws of the development of language." (p. 76)

The publication of Stalin's article, as previously indicated, brought the Soviet linguistic controversy to an abrupt end. Pravda, however, published 17 more articles and letters before finally closing the discussion. These pieces fall into four categories: proposals for a reorientation in Soviet linguistics based on Stalin's pronouncements, simple praise of his article, public confessions of error and repentance by leading Marrists (Meshchaninov, Chemadanov) and, finally, two short articles by Stalin in answer to requests for further elaboration of his original article.

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Maya Hieroglyphic Writing: Introduction. By J. Eric S. Thompson. Washington, Carnegie Institution, 1950. Pp. xvi + 347. 64 figures. Cloth $7.50, paper $7.00.

J. E. S. Thompson is one of the last of a generation of devoted Maya scholars like Gates, Morley, Roys, and Tozzer. Their great achievements have been in the sphere of archaeology, where their primary interests lay, though a secondary achievement has been building on the work of still earlier scholars in working out a detailed solution of that part of the Maya writing which deals with numbers and the calendar. The general language content of the glyphic inscriptions has, however, so far resisted all attempts at solution, in spite of the relatively favorable conditions under which the solution has been attempted. It is not to be wondered at that systems of writing like that of Easter Island should resist the scholar, since language, content of the inscriptions, and nature of the writing system are all unknown, and there is no convenient bilingual crib. In Maya hieroglyphics the language is known, and enough can be guessed from illustrations in the codices, and from the deciphered numerical and calendrical characters to define pretty well the content of the inscriptions. All that is lacking is knowledge of the method of writing, and a Rosetta stone. In short, so much is known or knowable, that failure of a final solution invites the suspicion that there have been shortcomings in the method by which the problem has been attacked.

The present book reveals what many of these shortcomings are. Thompson is first of all unaware that his problem is essentially a linguistic one, and is moreover naively ethnocentric in his linguistic statements. Thus on page 50 he says "In the opinion of Ralph L. Roys, tense is of much less importance to the Maya than to us. This blending of verb and noun may well be reflected in the hieroglyphic writing." Such an opinion is certainly in the nature of an understatement, since surely the first supposition ought to be that the inscription, being in Maya, would necessarily and completely conform to Maya linguistic structure, and that an attempt to read Maya writing as if the underlying structure were English would be doomed to failure. Similarly, Thompson assumes, as have all Maya scholars with the exception of Whorf, that many of the glyphs represent, not Maya words or constructions, but universal

ideas. Under such circumstances the temptation is strong to shortcut the Maya language forms altogether, and render the glyphs directly into English. A glance through this or any of the other publications in Maya hieroglyphics will amply confirm the statement that the intimate dependence of the inscriptions on Maya language is unfortunately minimized.

A second weakness, also at least in part due to lack of linguistic knowledge, is that the glyphs have been attacked and presented separately. The figures at the back of this book, which give most of the deciphered glyphs, present single forms drawn from various stelae and codices, quite without their environment. Language consists, on the contrary, of chains of minimal signals which make up utterances, and an atomistic approach in terms of isolated entities will not carry the interpreter very far. Suppose for instance that English writing is being deciphered by a learned Yucatec of some future age. He may know the meaning of the letters which make up the word 'horse,' but this knowledge will not help him very much in interpreting phrases like "a horse of another color," or "a horseback opinion."

Clearly a more helpful presentation of the glyphs would be one in which they were presented in sequences, so that statistical statements of the probabilities of sequential occurrence might be worked out. To cite one use of such material, it would settle once and for all a number of problems about the direction in which the inscriptions are to be read. We are told indeed, that the direction of reading is known, but we are not given the evidence on which that knowledge is based. For instance, if the sequences taken up and down the columns should turn out to be statistically consistent, while sequences back and forth across the rows presented a random order, it would be clear that the glyphs were arranged in columns. Actually the arrangement seems to be in columns consisting of pairs, which ought to be quite easily demonstrable in statistical terms.

Next there seems to have been no determined attack on the nature of the writing method. With the failure of the Landa 'alphabet' to provide the hoped for key, it has seemed evident to all scholars that the writing system is at least not a phonemic one, or indeed a polyphonemic (syllabic) one. The next best bet, then, would be that it was morphemic, and this seems to be the tacit assumption under which Thompson is working. There are hints as to how the morphemes are represented—one of the most interesting (see page 50) being in the place name Campech where we have the authority of an early chronicler that this was represented with the glyphs for *snake* (can) and *tick* (pech). Yet curiously enough we are not told whether these glyphs have actually been identified in the inscriptions. A further and far more important hint lies in the fact that most of the glyphs consist in a main character, and a secondary added character called an affix. This structure immediately suggests the structure of Chinese characters with their determinants, yet only Whorf has made any attempt to exploit the parallel. Were the glyph for the name Campech identified for us, it is quite possible that it might throw light on the affixes, and decide for us whether they are or are not determinants.

Finally, as in the pages of the Publications of the Maya Society, the style and organization of Thompson's book is discursive, interlarded with quotations from literature and the arts, and presented piecemeal so that closely related material is often widely separated. Such writing makes for reader interest perhaps, but it unfortunately does not make for closely controlled method. Since so much of Maya scholarship is of this semi-romantic nature, it is likely that the style of presentation has genuinely affected the method of attempted solution.

It is therefore a relief to turn from Thompson to the writings of Whorf. A

fair representation of his method is to be found in "Decipherment of the Linguistic Portion of the Maya Hieroglyphs," Annual Report of the Smithsonian Institution, 1941, pages 479–502. Thus on page 483:

> 'Ideographic' is an example of the so-called mentalistic terminology, which tells us nothing from a linguistic point of view. No kind of writing, no matter how crude or primitive, symbolizes ideas divorced from linguistic forms of expression. A symbol when standing alone may symbolize a 'pure idea,' but in order to represent an idea as one in a definite sequence of ideas it must become the symbol for a linguistic form or some fraction of a linguistic form. All writing systems, including the Chinese, symbolize simply linguistic utterances. As soon as enough symbols for utterances have been assembled to correspond uniquely to a plainly meaningful sequence (phrase or sentence, e.g.) in the language being written, that assembly of signs will inevitably convey the meaning of that linguistic sequence to the reader native to that language, no matter what each sign may symbolize in isolation.

We are at once in a different world, and obviously one in which a linguist can feel more at home. Whorf is dealing with language, Thompson with ideas. Whorf insists on sequences, Thompson presents isolated symbols. Further, quite apart from whether Whorf is right or not, he goes on to present the Maya glyphs as a systematic morphemic writing, consisting of phonetic elements and determinants. Finally, he presents a sentence in Maya, as the reading of a sequence of glyphs.

As might perhaps be expected, the Whorf proposals do not meet with Thompson's favor, and one of the appendices to his book is an attempt to demolish them. As a non-Maya expert, I can not fully judge the success of either Whorf or the attack on him. Yet as a linguist with some experience in graphemics and in problems of decipherment, a number of statements about method are possible to me. First, it is indeed true that some of the Whorf identifications seem shaky, and there is a certain messiness in the analysis in that he is forced from the start to assume multiple values. But he is working systematically, and comes up with a testable hypothesis. Thompson, in attacking Whorf confines himself to argument over the individual identifications, and is sometimes irrelevant, as when he attempts to discredit Whorf on the ground of a mistake in Uto-Aztecan reconstruction, which is surely another story.

In decipherment, on the other hand, only one test is really valid. Whorf has given us a sentence, and a number of word forms. No matter how shaky the hypotheses on which his identifications are built (could any hypothesis have been more shaky than Rawlinson's in attacking cuneiform?), if these forms when dragged through a large body of text give us more connected discourse of a recognizable form, then they are right. If they break down, no matter how logically constructed, then they are wrong. This test Thompson conspicuously fails to apply. Until it has been applied, attacks on Whorf are mere obscurantism.

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